

## Garrett, Dawn

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**From:** Huang, Mei Q. (ASRC)  
**Sent:** Friday, August 31, 2007 1:40 PM  
**To:** Garrett, Dawn  
**Subject:** Search Result - 10/562,652

**Follow Up Flag:** Review  
**Flag Status:** Flagged

Examiner Garrett,

I have to break up the search request into more than one piece. This is for the first one, formula 3 on page 10 of the spec. The structure of formula (3) is too broad to run a completion in the Registry file. So I only searched for -CF3 as the electron withdrawing group. The 23rd of the 55 answers on page 48 is the instant application.

Please feel free to contact me if you have any questions or if you would like to refine the search query. Thank you for using STIC search services!

Regards,  
Mei

*Mei Huang*

Technical Information Specialist  
ASRC Management Services (USPTO)  
EIC 1700 - REM Bldg 4B31  
(571)-272-3952  
mei.huang@uspto.gov



Gar652A1.doc



search  
feedback form.doc

=> fil reg

FILE 'REGISTRY' ENTERED AT 12:18:22 ON 31 AUG 2007

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STRUCTURE FILE UPDATES: 30 AUG 2007 HIGHEST RN 945894-95-1

DICTIONARY FILE UPDATES: 30 AUG 2007 HIGHEST RN 945894-95-1

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH June 29, 2007

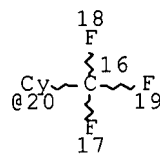
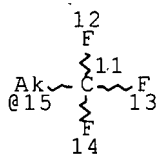
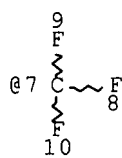
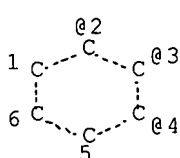
Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d l6 que stat

L2 STR



G1 @21

VAR G1=7/15/20

VPA 21-2/3/4 U

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC 1

NUMBER OF NODES IS 21

STEREO ATTRIBUTES: NONE

L3 SCR 1357

L4 711528 SEA FILE=REGISTRY SSS FUL L2 AND L3

L5 696857 SEA FILE=REGISTRY ABB=ON PLU=ON L4 NOT PMS/CI

L6 678495 SEA FILE=REGISTRY ABB=ON PLU=ON L5 NOT M/ELS

=> d his nofile

(FILE 'HOME' ENTERED AT 10:38:24 ON 31 AUG 2007)

FILE 'REGISTRY' ENTERED AT 10:38:33 ON 31 AUG 2007

ACT GAR652AU/A

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      817638-42-9/BI OR 817638-43-0/BI OR 817638-44-1/BI OR
      817638-45-2/BI OR 817638-46-3/BI OR 817638-47-4/BI OR
      817638-48-5/BI OR 817638-49-6/BI OR 817638-50-9/BI OR
      817638-51-0/BI OR 817638-53-2/BI OR 817638-55-4/BI OR
      817638-56-5/BI)
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      ACT GAR652A1/A
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L2      STR
L3      SCR 1357
L4      711528 SEA SSS FUL L2 AND L3
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L5      696857 SEA ABB=ON  PLU=ON  L4 NOT PMS/CI
L6      678495 SEA ABB=ON  PLU=ON  L5 NOT M/ELS
L7      673639 SEA ABB=ON  PLU=ON  L6 NOT SI/ELS
L8      673639 SEA ABB=ON  PLU=ON  L7 OR L7
      D RN 225000 L8
L9      448640 SEA RAN=(,825640-80-0) ABB=ON  PLU=ON  L7 OR L7
L10     224999 SEA ABB=ON  PLU=ON  L8 NOT L9
L11     448640 SEA ABB=ON  PLU=ON  L9 OR L9
      D RN 224000 L11
L12     224641 SEA RAN=(,332852-01-4) ABB=ON  PLU=ON  L9 OR L9
L13     223999 SEA ABB=ON  PLU=ON  L11 NOT L12

      FILE 'HCAPLUS' ENTERED AT 11:27:15 ON 31 AUG 2007
L14     9989 SEA ABB=ON  PLU=ON  L10
L15     106152 SEA ABB=ON  PLU=ON  L12
L16     14917 SEA ABB=ON  PLU=ON  L13
L17     QUE ABB=ON  PLU=ON  ELECTROLUM!N? OR ORGANOLUM!N?
L18     QUE ABB=ON  PLU=ON  ILLUMINAT?
L19     QUE ABB=ON  PLU=ON  (ELECTRO OR ORGANO OR ORG#) (2A) LUM!N?
      OR LIGHT (2A) (EMISSION? OR EMIT?) OR EL OR E(W) L OR OLED
      OR L(W) E(W) D
L20     739 SEA ABB=ON  PLU=ON  (L14 OR L15 OR L16) AND (L17 OR L18
      OR L19)
L21     73917 SEA ABB=ON  PLU=ON  (L17 OR L18 OR L19) (3A) (DEVICE? OR
      APPARAT? OR,APP## OR ASSEMBLY OR ASSEMBLIES)
L22     441 SEA ABB=ON  PLU=ON  L20 AND L21
L23     QUE ABB=ON  PLU=ON  DISPLAY? OR MONITOR? OR SCREEN? OR
      PANEL? OR FLATPANEL? OR FLAT(W) PANEL?
L24     111 SEA ABB=ON  PLU=ON  L22 AND L23
L25     86 SEA ABB=ON  PLU=ON  L24 AND (PY<=2004 OR PRY<=2004 OR
      AY<=2004)
L26     QUE ABB=ON  PLU=ON  OPTICAL?/SC,SX
L27     62 SEA ABB=ON  PLU=ON  L25 AND L26
L28     1 SEA ABB=ON  PLU=ON  2005:35085/AN
L29     1 SEA ABB=ON  PLU=ON  L27 AND L28
      SAV TEMP L28 GAR652AB/A
L30     QUE ABB=ON  PLU=ON  (ELECTROLUM!N?/TI OR ORGANOLUM!N?/TI)

L31     55 SEA ABB=ON  PLU=ON  L27 AND L30

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=> fil hcap

FILE 'HCAPLUS' ENTERED AT 12:19:08 ON 31 AUG 2007

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FILE COVERS 1907 - 31 Aug 2007 VOL 147 ISS 11  
FILE LAST UPDATED: 30 Aug 2007 (20070830/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l31 ibib abs fhitr hitind 1-55

L31 ANSWER 1 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2006:633207 HCAPLUS Full-text  
DOCUMENT NUMBER: 145:113533  
TITLE: Organic **electroluminescent (EL)**  
) **device** containing crown ether  
derivatives, its manufacture, and  
**display** and **illuminating**  
**device** using the same  
INVENTOR(S): Taka, Hideo; Kita, Hiroshi  
PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 58 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2006173230	A	20060629	JP 2004-361050	200412 14
			<--	
PRIORITY APPLN. INFO.:			JP 2004-361050	200412 14
			<--	

OTHER SOURCE(S): MARPAT 145:113533

AB The organic **EL device** involves, between a cathode and an anode, a layer containing crown ether derivs. CE(Lm1Am2)n (I; CE = residue of crown ether derivative; A = residue of fluorescent compound or phosphorescent compound; L = single bond, divalent linkage; n = 1-10 integer; m1, m2 = integer between 1 to n), wherein ≥1 of the ring of I is void. Preferably, I is contained in a diffusion-preventing layer provided adjacent to ≥1 of a layer selected from a cathode layer, a hole-transporting layer, and a **light-emitting** layer. The I-containing layer is formed



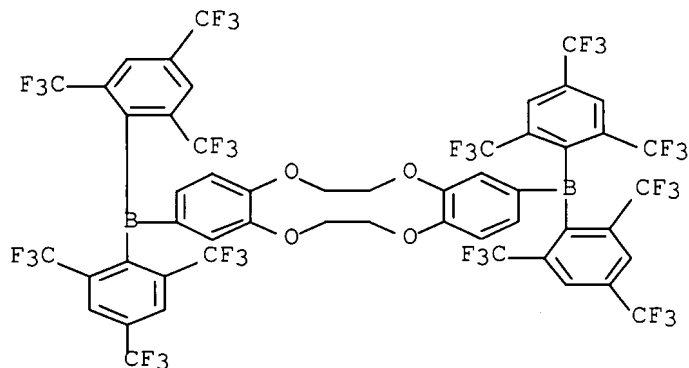
by coating process. The organic **EL device** has high external quantum efficiency, long emission life, and low driving voltage.

IT **894797-38-7**

RL: DEV (Device component use); USES (Uses)  
(manufacture of organic **EL device** containing crown ether  
derivs. for **display** and **illuminating  
device**)

RN 894797-38-7 HCAPLUS

CN Borane, (6,7,14,15-tetrahydrodibenzo[b,h][1,4,7,10]tetraoxacyclodode  
cin-2,10-diyl)bis[bis[2,4,6-tris(trifluoromethyl)phenyl]- (9CI) (CA  
INDEX NAME)



CC 74-13. (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)

Section cross-reference(s): 73

ST org **electroluminescent device** crown ether deriv;  
**electroluminescent display** crown ether deriv;  
**light emitting device** crown ether deriv

IT Crown ethers

RL: DEV (Device component use); USES (Uses)  
(diffusion preventing layer; manufacture of organic **EL  
device** containing crown ether derivs. for **display  
and illuminating device**)

IT **Electroluminescent devices**

(**displays**; manufacture of organic **EL device**  
containing crown ether derivs. for **display** and  
**illuminating device**)

IT Luminescent **screens**

(**electroluminescent**; manufacture of organic **EL  
device** containing crown ether derivs. for **display  
and illuminating device**)

IT **Electroluminescent devices**

(manufacture of organic **EL device** containing crown ether  
derivs. for **display** and **illuminating  
device**)

IT 7429-90-5, Aluminum, uses 7789-24-4, Lithium fluoride, uses

RL: DEV (Device component use); USES (Uses)  
(LiF/Al cathode; manufacture of organic **EL device**  
containing crown ether derivs. for **display** and  
**illuminating device**)

IT 50926-11-9, ITO

RL: DEV (Device component use); USES (Uses)  
(anode; manufacture of organic **EL device** containing crown

- ether derivs. for **display** and **illuminating device**)
- IT 14098-24-9D, 5H-pyrido[3,2-b]indolyl derivs. 894797-30-9  
894797-31-0 894797-32-1 894797-33-2 894797-35-4  
RL: DEV (Device component use); USES (Uses)  
(diffusion preventing layer; manufacture of organic **EL device** containing crown ether derivs. for **display** and **illuminating device**)
- IT 2085-33-8, Alq3  
RL: DEV (Device component use); USES (Uses)  
(electron transport layer; manufacture of organic **EL device** containing crown ether derivs. for **display** and **illuminating device**)
- IT 146162-54-1, Balq  
RL: DEV (Device component use); USES (Uses)  
(hole barrier layer; manufacture of organic **EL device** containing crown ether derivs. for **display** and **illuminating device**)
- IT 123847-85-8,  $\alpha$ -NPD 155090-83-8, Baytron P-AI 4083  
RL: DEV (Device component use); USES (Uses)  
(hole transport layer; manufacture of organic **EL device** containing crown ether derivs. for **display** and **illuminating device**)
- IT 58328-31-7, CBP  
RL: DEV (Device component use); USES (Uses)  
(host; manufacture of organic **EL device** containing crown ether derivs. for **display** and **illuminating device**)
- IT 693794-98-8  
RL: DEV (Device component use); USES (Uses)  
(**light-emitting** layer; manufacture of organic **EL device** containing crown ether derivs. for **display** and **illuminating device**)
- IT 14187-32-7D, bis(alkyldibenzopyrrole) derivs. 894797-34-3  
894797-36-5 894797-37-6 **894797-38-7**  
RL: DEV (Device component use); USES (Uses)  
(manufacture of organic **EL device** containing crown ether derivs. for **display** and **illuminating device**)

L31 ANSWER 2 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:540957 HCAPLUS Full-text

DOCUMENT NUMBER: 145:36942

TITLE: **Light-emitting** phenyl  
anthracene derivatives and organic  
**electroluminescent devices** and  
**displays** using them

INVENTOR(S): Coggan, Jennifer A.; Aziz, Hany; Bender, Timothy  
P.; Hu, Nan-Xing

PATENT ASSIGNEE(S): Xerox Corporation., USA

SOURCE: U.S. Pat. Appl. Publ., 21 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

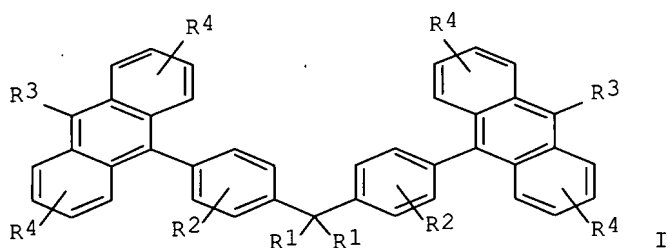
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2006121311	A1	20060608	US 2004-6000	200412 07
			<--	
CA 2529117	A1	20060607	CA 2005-2529117	200512 06
			<--	
EP 1669428	A1	20060614	EP 2005-26597	200512 06
			<--	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
KR 2006063762	A	20060612	KR 2005-118819	200512 07
			<--	
JP 2006183047	A	20060713	JP 2005-353338	200512 07
			<--	
CN 1821341	A	20060823	CN 2005-10127901	200512 07
			<--	
PRIORITY APPLN. INFO.:			US 2004-6000	A 200412 07
			<--	
OTHER SOURCE(S):		MARPAT 145:36942		
GI				



AB **Light-emitting** materials are described by the general formula I (R1 = independently selected at each occurrence H, alkyl, aryl, heteroaryl, alkoxy, amino, alkyl amino, and aryl amino; R2 = independently selected at each occurrence H, hetero, and alkyl; R3 = independently selected at each occurrence H, alkyl, aryl, heteroaryl, alkoxy, halo, and cyano; and R4 = independently selected at each occurrence H, alkyl, aryl, heteroaryl, alkoxy, halo, and cyano). **Light-emitting devices** and **displays** employing the materials are also described.

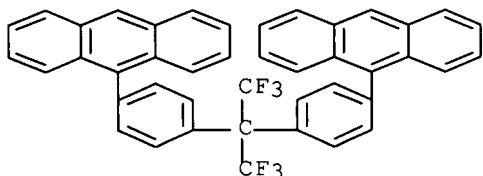
IT **889649-47-2P**

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(**light-emitting** Ph anthracene derivs. and  
organic **electroluminescent devices** and  
**displays** using them)

RN 889649-47-2 HCAPLUS

CN Anthracene, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-  
4,1-phenylene]bis- (9CI) (CA INDEX NAME)



INCL 428690000; 428917000; 313504000; 313506000; 585026000

CC 73-5 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)

Section cross-reference(s): 74, 76

ST phenyl anthracene deriv **light emitting** material

**electroluminescent device display**

IT **Electroluminescent devices**

(**displays**, organic; **light-emitting** Ph  
anthracene derivs. and organic **electroluminescent**  
**devices** and **displays** using them)

IT **Luminescent screens**

(**electroluminescent**, organic; **light-**  
**emitting** Ph anthracene derivs. and organic  
**electroluminescent devices** and **displays**  
using them)

IT **Luminescent substances**

(**light-emitting** Ph anthracene derivs. and  
organic **electroluminescent devices** and  
**displays** using them)

IT **Electroluminescent devices**

(organic; **light-emitting** Ph anthracene derivs.  
and organic **electroluminescent devices** and  
**displays** using them)

IT 889649-38-1 889649-39-2 889649-40-5 889649-41-6 889649-42-7  
889649-43-8 889649-44-9

RL: DEV (Device component use); USES (Uses)  
(**light-emitting** Ph anthracene derivs. and  
organic **electroluminescent devices** and  
**displays** using them)

IT 736138-29-7P 889649-37-0P **889649-47-2P**

RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)

(**light-emitting** Ph anthracene derivs. and  
organic **electroluminescent devices** and  
**displays** using them)

IT 79-97-0, Bisphenol C 80-05-7, Bisphenol A, reactions 358-23-6,

Trifluoromethane sulfonic anhydride **1478-61-1**, Bisphenol

AF 1564-64-3, 9-Bromoanthracene 61676-62-8, 2-Isopropoxy-4,4,5,5-  
tetramethyl-1,3,2-dioxaborolane

RL: RCT (Reactant); RACT (Reactant or reagent)

(**light-emitting** Ph anthracene derivs. and  
organic **electroluminescent devices** and

displays using them)  
 IT 83558-77-4P 139725-20-5P 709022-63-9P 889649-45-0P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (light-emitting Ph anthracene derivs. and  
 organic electroluminescent devices and  
 displays using them)

L31 ANSWER 3 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:510707 HCAPLUS Full-text

DOCUMENT NUMBER: 145:17894

TITLE: Pyrene compound and light  
 emitting transistor device  
 utilizing the same for  
 electroluminescent display

INVENTOR(S): Oyamada, Takahito; Uchiuzou, Hiroyuki; Adachi,  
 Chihaya; Akiyama, Seiji; Takahashi, Takayoshi  
 PATENT ASSIGNEE(S): Kyoto University, Japan; Nippon Telegraph and  
 Telephone Corporation; Pioneer Corporation;  
 Hitachi, Ltd.; Mitsubishi Chemical Corporation;  
 Rohm Co., Ltd.

SOURCE: PCT Int. Appl., 47 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006057326	A1	20060601	WO 2005-JP21648	200511 25

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN,  
 KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK,  
 MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO,  
 RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ,  
 UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
 IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
 TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM  
 JP 2006176491 A 20060706 JP 2005-257934

200509  
06

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EP 1816114 A1 20070808 EP 2005-809746

200511  
25

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R: DE

PRIORITY APPLN. INFO.:

JP 2004-340362

A

200411  
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JP 2005-257934

A

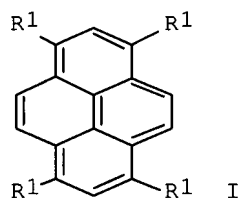
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WQ 2005-JP21648

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200511  
25

OTHER SOURCE(S): MARPAT 145:17894  
GI



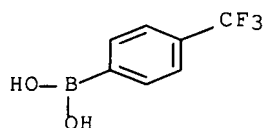
AB A pyrene compound that when used in a **light emitting transistor device**, excels in both the properties of **light emission** and mobility; and a **light emitting transistor device** utilizing such a specified pyrene compound As a main constituent of a luminescent layer of **light emitting transistor device**, use is made of a pyrene compound of the chemical formula I (R1 = heteroaryl, aryl (excluding Ph), C1-20-alkyl, alkenyl, alkynyl, silyl, halo).

IT 128796-39-4

RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of pyrene compound and **light emitting transistor device** utilizing the same for **electroluminescent display**)

RN 128796-39-4 HCAPLUS

CN Boronic acid, B-[4-(trifluoromethyl)phenyl]- (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 25, 73, 76

ST pyrene compd phosphor synthesis **light emitting transistor electroluminescent display**

IT **Electroluminescent devices**

(**displays**; pyrene compound and **light emitting transistor device** utilizing the same for **electroluminescent display**)

IT Luminescent **screens**

(**electroluminescent**; pyrene compound and **light emitting transistor device** utilizing the same

for **electroluminescent display**)

IT Transistors

(pyrene compound and **light emitting transistor device** utilizing the same for **electroluminescent display**)

IT 129-00-0, Pyrene, reactions 1765-93-1, 4-Fluorophenylboric acid  
4363-35-3 5122-94-1 5122-95-2 5720-05-8 17933-03-8  
32316-92-0, 2-Naphthylboric acid 54663-78-4, 2-Thienyltributyltin  
128796-39-4 156545-07-2 274251-67-1,

3,5-Bis(trifluoromethyl)phenylboric acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of pyrene compound and **light emitting transistor device** utilizing the same for **electroluminescent display**)

IT 128-63-2P, 1,3,6,8-Tetrabromopyrene

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)

(preparation of pyrene compound and **light emitting transistor device** utilizing the same for **electroluminescent display**)

IT 835878-24-5P 881853-23-2P 887909-68-4P 887909-71-9P  
887909-73-1P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of pyrene compound and **light emitting transistor device** utilizing the same for **electroluminescent display**)

IT 790273-07-3P 870133-71-4P 870259-00-0P 881853-25-4P  
887909-55-9P 887909-57-1P 887909-59-3P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(pyrene compound and **light emitting transistor device** utilizing the same for **electroluminescent display**)

REFERENCE COUNT:

21

THERE ARE 21 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L31 ANSWER 4 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:485459 HCAPLUS Full-text

DOCUMENT NUMBER: 144:498363

TITLE: Organic **electroluminescent**

**device** showing excellent luminescent  
characteristic and durability for blue and  
multicolor **light emission**

INVENTOR(S): Uchida, Osamu; Osaka, Itaru

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

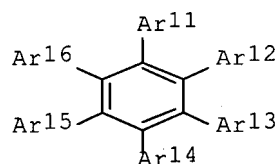
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2006135184	A	20060525	JP 2004-324095	20041108

PRIORITY APPLN. INFO.:

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JP 2004-324095200411  
08OTHER SOURCE(S): MARPAT 144:498363  
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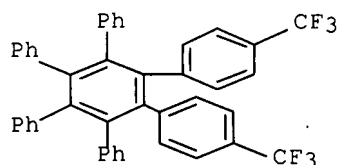
AB The title organic **electroluminescent device** contains an aryl group- or aromatic heterocyclic group-containing aromatic compound represented by I (Ar11-16 = aryl, aromatic heterocyclyl).

IT **887498-09-1**

RL: DEV (Device component use); USES (Uses)  
(in organic **electroluminescent device** showing  
excellent luminescent characteristic and durability for blue and  
multicolor **light emission**)

RN 887498-09-1 HCAPLUS

CN 1,1':2',1''-Terphenyl, 3',4',5',6'-tetraphenyl-4,4''-  
bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 73

ST org **electroluminescent device display**  
blue emitting white multicolor

IT **Electroluminescent devices**  
(blue-emitting; organic **electroluminescent device**  
showing excellent luminescent characteristic and durability for  
blue and multicolor **light emission**)

IT **Electroluminescent devices**  
(displays; organic **electroluminescent**  
**device** showing excellent luminescent characteristic and  
durability for blue and multicolor **light**  
**emission**)

IT **Luminescent screens**



(electroluminescent; organic

**electroluminescent device** showing excellent  
luminescent characteristic and durability for blue and multicolor  
**light emission**)

IT 35525-35-0 136118-18-8 **887498-09-1** 887498-10-4  
887498-11-5 887498-12-6 887498-13-7 887498-14-8

RL: DEV (Device component use); USES (Uses)  
(in organic **electroluminescent device** showing  
excellent luminescent characteristic and durability for blue and  
multicolor **light emission**)

IT **866462-83-1P** 878746-72-6P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(in organic **electroluminescent device** showing  
excellent luminescent characteristic and durability for blue and  
multicolor **light emission**)

IT **455-13-0**, p-(Trifluoromethyl)iodobenzene 637-44-5,  
Phenylacetylenecarboxylic acid **705-31-7** 15570-45-3  
42048-22-6

RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of aromatic compound for organic **electroluminescent**  
**device** showing excellent luminescent characteristic and  
durability for blue and multicolor **light**  
**emission**)

IT **119757-51-6P** 887498-07-9P 887498-08-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)  
(preparation of aromatic compound for organic **electroluminescent**  
**device** showing excellent luminescent characteristic and  
durability for blue and multicolor **light**  
**emission**)

L31 ANSWER 5 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:443298 HCAPLUS Full-text

DOCUMENT NUMBER: 144:477931

TITLE: Organic **electroluminescence** elements  
containing iridium complexes, and  
**display** and lamps using them

INVENTOR(S): Oshiyama, Tomohiro; Nishizeki, Masato

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 97 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2006120905	A	20060511	JP 2004-307963	200410 22

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PRIORITY APPLN. INFO.:

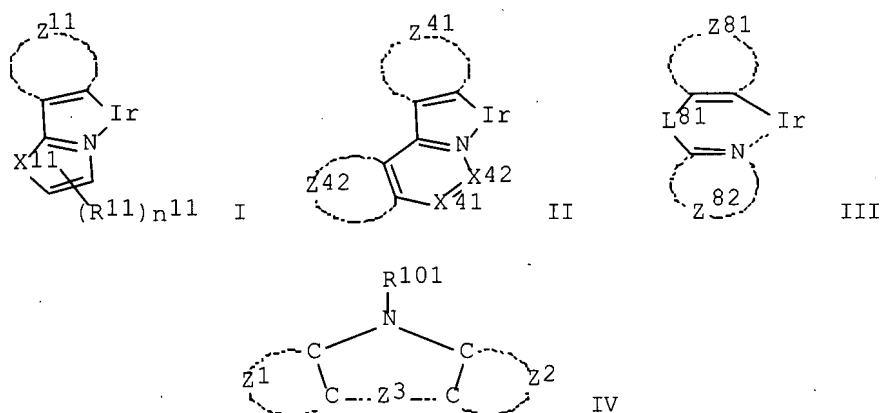
JP 2004-307963

200410  
22

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OTHER SOURCE(S): MARPAT 144:477931

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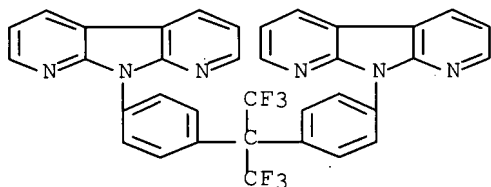
AB The **electroluminescence (EL)** elements contain (A) Ir complexes having partial structures of I (Z11 = group of atoms for forming aromatic hydrocarbon ring or aromatic heteroring; R11 = substituent; X11 = O, S, NR12; R12 = H, substituent; n11 = 0-2), II (Z41 = group of atoms for forming  $\geq 6$ -membered aromatic hydrocarbon ring or aromatic heteroring; Z42 = group of atoms for forming aromatic hydrocarbon ring or aromatic heteroring; X41, X42 = N, :CR41; R41 = H, substituent), III (Z81 = group of atoms for forming aromatic hydrocarbon ring or aromatic heteroring; Z82 = group of atoms for forming aromatic heteroring; L81 = divalent linking group), etc. or their tautomers and (B) compds. IV [Z1 = (un)substituted aromatic heteroring; Z2 = (un)substituted aromatic heteroring, (un)substituted aromatic hydrocarbon ring; Z3 = divalent linking group, direct linkage; R101 = H, substituent]. Organic **EL** elements with high luminescent efficiency and long life are obtained with this invention.

IT 787577-61-1

RL: DEV (Device component use); USES (Uses)  
(host, hole-blocking agent; Ir complex dopants for organic  
**EL devices** with long life)

RN 787577-61-1 HCAPLUS

CN 9H-Pyrrolo[2,3-b:5,4-b']dipyridine, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73, 76

ST org **EL display** iridium complex heteroring dopant

long life; **electroluminescence** lamp iridium complex  
luminescent efficiency

IT Electric lamps

**Electroluminescent devices**

(Ir complex dopants for organic **EL devices** with  
long life)

IT **Electroluminescent devices**

(**displays**; Ir complex dopants for organic **EL  
devices** with long life)

IT Luminescent **screens**

(**electroluminescent**; Ir complex dopants for organic  
**EL devices** with long life)

IT 787577-28-0 787577-56-4 **787577-61-1** 787577-64-4  
787577-68-8 787577-72-4 787582-73-4 869799-59-7

RL: DEV (Device component use); USES (Uses)

(host, hole-blocking agent; Ir complex dopants for organic  
**EL devices** with long life)

IT 435293-93-9 449727-92-8 606142-56-7 872327-68-9 886210-20-4  
886210-21-5 886210-22-6 886210-23-7 886210-24-8 886210-25-9  
886210-26-0 886210-27-1 886210-28-2 886210-29-3 886210-30-6  
886210-31-7 886210-32-8 886210-33-9 886210-34-0 886210-35-1  
886210-36-2 886210-37-3

RL: DEV (Device component use); USES (Uses)

(luminescence dopant; Ir complex dopants for organic **EL  
devices** with long life).

L31 ANSWER 6 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:443247 HCAPLUS Full-text

DOCUMENT NUMBER: 144:442397

TITLE: Organic **electroluminescent  
device**, and its use in lighting  
apparatus and **display**

INVENTOR(S): Otsu, Shinya; Kato, Eisaku; Suzurizato,  
Yoshiyuki; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 105 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2006120821	A	20060511	JP 2004-306503	200410 21

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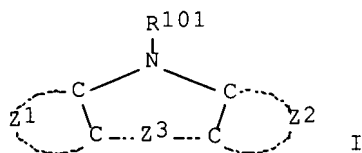
PRIORITY APPLN. INFO.: JP 2004-306503

200410  
21

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OTHER SOURCE(S): MARPAT 144:442397

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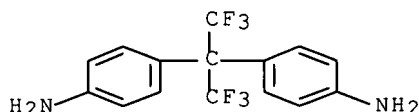
AB The **device** has (1) a **light-emitting** layer containing  $\geq 2$  kinds of dopants between an anode and a cathode and (2) a layer containing aromatic N-containing compds. I (Z1 = aromatic heterocyclic ring; Z2 = Z1, aromatic hydrocarbon ring; Z3 = divalent linking group, single bond; R101 = H, substituent). The device shows high emission efficiency and long life.

IT 1095-78-9

RL: RCT (Reactant); RACT (Reactant or reagent)  
(aromatic compound from; organic **electroluminescent device** having dopant-containing **light-emitting** layer and aromatic N compound-containing layer for lighting apparatus and **display**)

RN 1095-78-9 HCAPLUS

CN Benzenamine, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-  
(CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST org **electroluminescent device** arom heterocyclic compd lighting app **display**; arom nitrogen compd'layer **electroluminescent device**

IT **Electroluminescent devices**

(**displays**; organic **electroluminescent device** having dopant-containing **light-emitting** layer and aromatic N compound-containing layer for lighting apparatus and **display**)

IT Liquid crystal **displays**

(**electroluminescent** lighting apparatus for; organic **electroluminescent device** having dopant-containing **light-emitting** layer and aromatic N compound-containing layer for lighting apparatus and **display**)

IT **Luminescent screens**

(**electroluminescent**; organic **electroluminescent device** having dopant-containing **light-emitting** layer and aromatic N compound-containing layer for lighting apparatus and **display**)

IT **Electroluminescent devices**

(organic **electroluminescent device** having dopant-containing **light-emitting** layer and aromatic N compound-containing layer for lighting apparatus and **display**)

IT 244-63-3,  $\beta$ -Carboline 244-69-9,  $\gamma$ -Carboline 245-08-9,  
 $\delta$ -Carboline 1095-78-9 3001-15-8,

4,4'-Diiodobiphenyl 27353-36-2 787578-41-0 787578-44-3

RL: RCT (Reactant); RACT (Reactant or reagent)

(aromatic compound from; organic **electroluminescent device** having dopant-containing **light-emitting** layer and aromatic N compound-containing layer for lighting apparatus and **display**)

IT 1450-63-1 1499-10-1 27130-32-1 80663-92-9 142289-08-5  
337526-88-2 344796-22-1 349666-25-7 376367-93-0 693794-98-8  
800395-01-1

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(dopant; organic **electroluminescent device** having dopant-containing **light-emitting** layer and aromatic N compound-containing layer for lighting apparatus and **display**)

IT 787577-28-0 787577-49-5 787578-09-0 787582-73-4 853016-93-0  
870717-06-9 873803-01-1 885123-71-7

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(organic **electroluminescent device** having dopant-containing **light-emitting** layer and aromatic N compound-containing layer for lighting apparatus and **display**)

IT 787577-68-8P 787577-77-9P 787577-80-4P **787578-19-2P**  
**787578-21-6P 787578-23-8P**

RL: DEV (Device component use); MOA (Modifier or additive use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)

(organic **electroluminescent device** having dopant-containing **light-emitting** layer and aromatic N compound-containing layer for lighting apparatus and **display**)

L31 ANSWER 7 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2006:443232 HCAPLUS Full-text  
DOCUMENT NUMBER: 144:442396  
TITLE: Organic **electroluminescent device**, and its use in lighting apparatus and **display**

INVENTOR(S): Kato, Eisaku; Otsu, Shinya; Yasukawa, Noriko  
PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 99 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent  
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

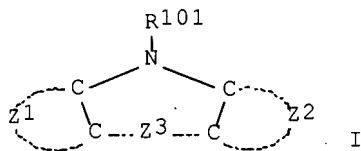
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006120763	A	20060511	JP 2004-305349	20041020

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PRIORITY APPLN. INFO.: JP 2004-305349 20041020

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OTHER SOURCE(S): MARPAT 144:442396  
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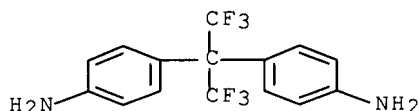
AB The **device** has a **light-emitting** layer between an anode and a cathode, wherein a layer which is not in contact with the cathode directly contains aromatic N-containing compds. I (Z1 = aromatic heterocyclic ring; Z2 = Z1, aromatic hydrocarbon ring; Z3 = divalent linking group, single bond; R101 = H, substituent) and 0.1-1000 ppm (as metal, based on I) of nonluminous metals or metal salts. The device shows high outside emission quantum efficiency, low consumption power, and long life.

IT 1095-78-9

RL: RCT (Reactant); RACT (Reactant or reagent)  
(aromatic compound from; organic **electroluminescent device** having aromatic N compound- and nonluminous metal-containing layer for lighting apparatus and **display**)

RN 1095-78-9 HCAPLUS

CN Benzenamine, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-  
(CA INDEX NAME)



CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST org **electroluminescent device** arom heterocyclic compd lighting app **display**; nonluminous metal arom nitrogen compd layer **electroluminescent device**

IT **Electroluminescent devices**

(displays; organic **electroluminescent device** having aromatic N compound- and nonluminous metal-containing layer for lighting apparatus and **display**)

IT Liquid crystal **displays**

(**electroluminescent** lighting apparatus for; organic **electroluminescent device** having aromatic N compound- and nonluminous metal-containing layer for lighting apparatus and **display**)

IT **Luminescent screens**

(**electroluminescent**; organic **electroluminescent device** having aromatic N compound- and nonluminous metal-containing layer for lighting apparatus and **display**)

IT **Electroluminescent devices**

(organic **electroluminescent device** having aromatic N compound- and nonluminous metal-containing layer for lighting apparatus and **display**)

IT 244-63-3,  $\beta$ -Carboline 244-69-9,  $\gamma$ -Carboline 245-08-9,  
 $\delta$ -Carboline 1095-78-9 3001-15-8,  
 4,4'-Diiodobiphenyl 27353-36-2 787578-41-0 787578-44-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (aromatic compound from; organic **electroluminescent device** having aromatic N compound- and nonluminous metal-containing layer for lighting apparatus and **display**)

IT 127-08-2, Potassium acetate 3375-31-3 7440-23-5, Sodium, uses  
 7681-49-4, Sodium fluoride, uses 7789-23-3, Potassium fluoride  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)  
 (nonluminous; organic **electroluminescent device** having aromatic N compound- and nonluminous metal-containing layer for lighting apparatus and **display**)

IT 869799-62-2 873803-01-1 874803-03-9 885117-77-1 885117-79-3  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)  
 (organic **electroluminescent device** having aromatic N compound- and nonluminous metal-containing layer for lighting apparatus and **display**)

IT 787577-68-8P 787577-77-9P 787577-80-4P 787578-19-2P  
 787578-21-6P 787578-23-8P  
 RL: DEV (Device component use); MOA (Modifier or additive use); PNU  
 (Preparation, unclassified); PREP (Preparation); USES (Uses)  
 (organic **electroluminescent device** having aromatic N compound- and nonluminous metal-containing layer for lighting apparatus and **display**)

L31 ANSWER 8 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:443226 HCAPLUS Full-text

DOCUMENT NUMBER: 144:458574

TITLE: Organic **electroluminescence** elements  
 having host compounds with N-containing  
 condensed ring structures, and **displays**  
 and lightings using them

INVENTOR(S): Sekine, Noboru; Oshiyama, Tomohiro; Nishizeki,  
 Masato

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 105 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

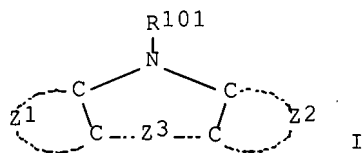
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2006120689	A	20060511	JP 2004-304053	200410 19

PRIORITY APPLN. INFO.: <-- JP 2004-304053 200410  
 19

OTHER SOURCE(S): MARPAT 144:458574 <--

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AB The **electroluminescence (EL)** elements have multiple luminescence layers,  $\geq 1$  of which contain compds. I (Z1 = aromatic heteroring; Z2 = aromatic heteroring, aromatic hydrocarbon ring; Z3 = divalent linking group, direct linkage; R101 = H, substituent). **EL** elements with long life, high luminescence efficiency, and fine color tunability are obtained with this invention.

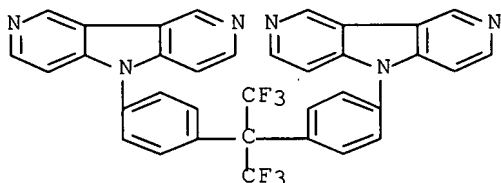
IT **787578-19-2P**

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(host compds. with N-containing condensed ring structures for organic **EL devices** with long life and high luminescence efficiency)

RN 787578-19-2 HCAPLUS

CN 5H-Pyrrolo[3,2-c:4,5-c']dipyridine, 5,5'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis- (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73, 76

ST org **EL device** pyrrole deriv host long life;

**electroluminescent** elec lamp host pyrrolodipyridine

IT **Electroluminescent devices**

(**displays**; host compds. with N-containing condensed ring structures for organic **EL devices** with long life and high luminescence efficiency)

IT Luminescent **screens**

(**electroluminescent**; host compds. with N-containing condensed ring structures for organic **EL devices** with long life and high luminescence efficiency)

IT Electric lamps

**Electroluminescent devices**

(host compds. with N-containing condensed ring structures for organic **EL devices** with long life and high luminescence efficiency)

IT 787577-34-8 787582-73-4 874802-49-0 885604-12-6 885604-15-9

RL: DEV (Device component use); USES (Uses)

(host compds. with N-containing condensed ring structures for organic **EL devices** with long life and high luminescence efficiency)



efficiency)  
IT 787577-68-8P 787577-77-9P 787577-80-4P 787578-19-2P  
787578-21-6P 787578-23-8P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(host compds. with N-containing condensed ring structures for organic  
**EL devices** with long life and high luminescence  
efficiency)  
IT 244-63-3,  $\beta$ -Carboline 244-69-9,  $\gamma$ -Carboline 245-08-9,  
 $\delta$ -Carboline 1095-78-9 3001-15-8,  
4,4'-Diiodobiphenyl 27353-36-2 787578-41-0 787578-44-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(host compds. with N-containing condensed ring structures for organic  
**EL devices** with long life and high luminescence  
efficiency)

L31 ANSWER 9 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2006:117761 HCAPLUS Full-text  
DOCUMENT NUMBER: 144:180488  
TITLE: Organic **electroluminescent**  
**device, illuminating**  
**device and display**

INVENTOR(S): Sugita, Shuichi; Suzuri, Yoshiyuki; Kita,  
Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: PCT Int. Appl., 115 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2006013739	A1	20060209	WO 2005-JP13485	200507 22

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,  
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,  
MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,  
SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: JP 2004-227880

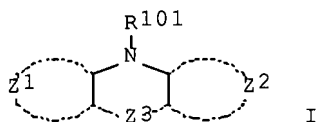
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OTHER SOURCE(S): MARPAT 144:180488

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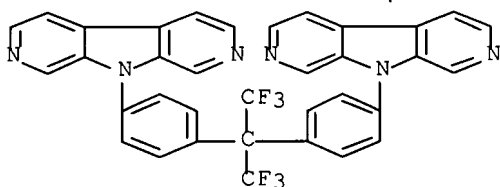
AB Disclosed is an organic **electroluminescent device** comprising at least a **light-emitting** layer between a cathode and an anode. The organic **electroluminescent device** is characterized in that at least one layer of organic layers arranged between the **light-emitting** layer and the cathode contains at least one compound represented by the general formula I, and at least one alkali metal, alkaline earth metal or salt, where Z1 represents an aromatic heterocyclic ring; Z2 represents an aromatic heterocyclic ring or an aromatic hydrocarbon ring; Z3 represents a divalent linking group or a bonding hand; and R101 represents a hydrogen atom or a substituent.

IT 874802-69-4

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device**,  
**illuminating device** and **display**)

RN 874802-69-4 HCAPLUS

CN 9H-Pyrrolo[2,3-c:5,4-c']dipyridine, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS C07D471-04; C07D471-14; C09K011-06; H05B033-14

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 28, 74

ST arom heterocyclic compd **electroluminescent device**  
**illuminating display**

IT **Electroluminescent devices**  
(organic **electroluminescent device**,  
**illuminating device** and **display**)

IT 534-17-8, Cesium carbonate 1662-01-7 2085-33-8, Alq3  
7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses 7440-23-5,  
Sodium, uses 7440-24-6, Strontium, uses 7440-39-3, Barium, uses  
7440-46-2, Cesium, uses 7440-70-2, Calcium, uses 7647-17-8,  
Cesium chloride, uses 58328-31-7, CBP 123847-85-8,  $\alpha$ -NPD  
146162-54-1, Balq 376367-93-0 693794-98-8 787577-37-1  
787577-83-7 787577-98-4 787578-01-2 787578-07-8 787578-11-4  
787582-73-4 853016-93-0 869799-56-4 869799-57-5 869799-59-7  
869799-62-2 869812-82-8 869857-44-3 874802-49-0 874802-51-4  
874802-53-6 874802-55-8 874802-57-0 874802-59-2 874802-61-6  
874802-63-8 874802-65-0 874802-67-2 **874802-69-4**

874802-73-0 874802-80-9 874802-83-2 874802-85-4 874802-89-8  
874802-96-7 874802-98-9 874803-00-6 874803-03-9  
874803-05-1 874803-07-3

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device**,  
**illuminating device** and **display**)

IT 787577-68-8P 787577-77-9P 787577-80-4P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)  
(organic **electroluminescent device**,  
**illuminating device** and **display**)

IT 787578-19-2P 787578-23-8P

RL: PRP (Properties); SPN (Synthetic preparation); PREP  
(Preparation)  
(organic **electroluminescent device**,  
**illuminating device** and **display**)

IT 244-63-3, 9H-Pyrido[3,4-b]indole 245-08-9, 5H-Pyrido[3,2-b]indole  
1095-78-9 3001-15-8 27353-36-2 787578-41-0  
787578-44-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic **electroluminescent device**,  
**illuminating device** and **display**)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN  
THE RE FORMAT

L31. ANSWER 10 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:100655 HCAPLUS Full-text

DOCUMENT NUMBER: 144:159972

TITLE: Red-emitting organic **electroluminescent device**

INVENTOR(S): Nakaya, Tadao; Saikawa, Tomoyuki

PATENT ASSIGNEE(S): Hirose Engineering Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2006032868	A	20060202	JP 2004-213607	200407 21

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PRIORITY APPLN. INFO.: JP 2004-213607

200407  
21

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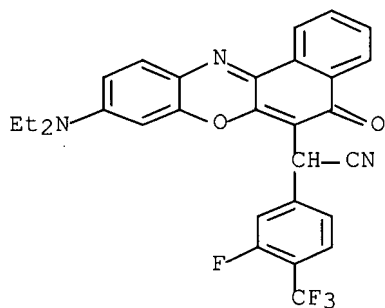
AB The invention relates to a red-emitting organic **electroluminescent device**, suited for use in making a full color **electroluminescent display**, comprising a transparent substrate, an anode, a hole- injection/transport layer, an **electroluminescent** layer containing a nile red-based red-emitting dye, a blocking layer, an electron injection layer and a cathode, wherein the blocking layer contains a charge blocking agent selected from triazoles, oxadiazoles and Al-containing metal complexes.

IT 569686-12-0

RL: DEV (Device component use); USES (Uses)

(red-emitting organic **electroluminescent device**)

RN 569686-12-0 HCAPLUS

CN 5H-Benzo[a]phenoxazine-6-acetonitrile, 9-(diethylamino)- $\alpha$ -[3-fluoro-4-(trifluoromethyl)phenyl]-5-oxo- (CA INDEX NAME)

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

ST org **electroluminescent device** red emitting

IT **Electroluminescent devices**  
(IR-emitting; red-emitting organic **electroluminescent device**)

IT IR sources  
(**electroluminescent**; red-emitting organic **electroluminescent device**)

IT **Electroluminescent devices**  
(red-emitting organic **electroluminescent device**)

IT 4733-39-5, 2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline  
RL: DEV (Device component use); USES (Uses)  
(blocking agent; red-emitting organic **electroluminescent device**)

IT 2085-33-8, Al 8q  
RL: DEV (Device component use); USES (Uses)  
(electron transport layer; red-emitting organic **electroluminescent device**)

IT 123847-85-8,  $\alpha$ -NPD  
RL: DEV (Device component use); USES (Uses)  
(hole injection/transport layer; red-emitting organic **electroluminescent device**)

IT 7385-67-3D, Nile red, derivs. 569686-12-0  
RL: DEV (Device component use); USES (Uses)  
(red-emitting organic **electroluminescent device**)

L31 ANSWER 11 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1307810 HCAPLUS Full-text

DOCUMENT NUMBER: 144:43335

TITLE: Organic **electroluminescent devices** with high light extraction efficiency and long lifetime and **illuminations** and **displays** therewith

INVENTOR(S): Otsu, Shinya; Oshiyama, Tomohiro; Suzurizato, Yoshiyuki; Kato, Eisaku; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 108 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005347160	A	20051215	JP 2004-166951	20040604

PRIORITY APPLN. INFO.: <-- JP 2004-166951 20040604

OTHER SOURCE(S): MARPAT 144:43335  
 GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

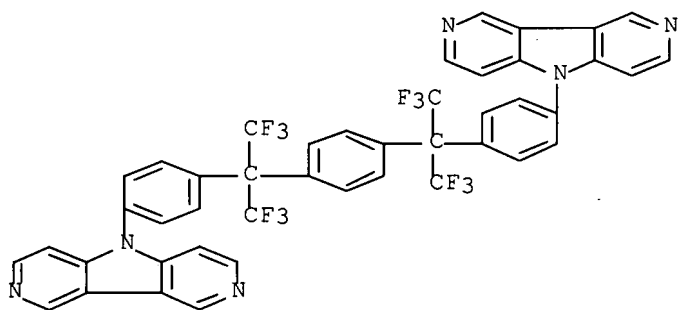
AB The **electroluminescent devices** have hole-blocking layers containing I (Z1 = aromatic heterocyclic ring; Z2 = aromatic heterocyclic or hydrocarbon ring; Z3 = divalent linking group, linkage; R101 = H, substituent) and emitting layers containing II (R21 = substituent; n2 = 0-5), III (Ar31, Ar32 = arylene, divalent heterocyclic ring; R31-R34 = substituent; L3 = 2- or 3-valent linking group, single bond; n31-n34 = 0-4; n3 = 1, 2), IV (Ra-Rg = H, substituent; m = 1-3; n = 0-2), and/or R51Ar51C:CR52Ar52 (Ar51, Ar52 = aromatic hydrocarbon or heterocyclic group; R51, R52 = H, substituent; R51 and R52 are in cis position).

IT 787577-66-6

RL: DEV (Device component use); USES (Uses)  
 (hole-blocking layers; organic **EL illuminations**  
 and **displays** with high light extraction efficiency and long  
 lifetime)

RN 787577-66-6 HCAPLUS

CN 5H-Pyrrolo[3,2-c:4,5-c']dipyridine, 5,5'-[1,4-phenylenebis[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]-4,1-phenylene]]bis- (9CI)  
 (CA INDEX NAME)



IC ICM H05B033-22

ICS C07D471-04; C07D471-14; C07D487-14; C07D495-04; C07D498-14;  
 C07D513-14; C09K011-06; H05B033-14

- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73
- ST org **electroluminescent display**  
**illumination** light extn efficiency; carbazoyl biphenylene emitting layer **EL display**; biphenylene carboline hole blocking layer **EL display**
- IT **Illumination**  
(apparatus; organic **EL illuminations** and **displays** with high light extraction efficiency and long lifetime)
- IT **Electroluminescent devices**  
(**displays**; organic **EL illuminations** and **displays** with high light extraction efficiency and long lifetime)
- IT **Luminescent screens**  
(**electroluminescent**; organic **EL illuminations** and **displays** with high light extraction efficiency and long lifetime)
- IT **Electroluminescent devices**  
(organic **EL illuminations** and **displays** with high light extraction efficiency and long lifetime)
- IT 2085-33-8, Alq3 58328-31-7 848724-46-9 848724-47-0 848724-55-0  
RL: DEV (Device component use); USES (Uses)  
(emitting layers, hosts; organic **EL illuminations** and **displays** with high light extraction efficiency and long lifetime)
- IT 376367-93-0 693794-98-8 800395-01-1  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(emitting layers, phosphorescent activators; organic **EL illuminations** and **displays** with high light extraction efficiency and long lifetime)
- IT 787577-66-6 787582-73-4 853016-94-1 869799-56-4 869799-57-5 869799-59-7 869799-61-1 869857-44-3 870717-06-9  
RL: DEV (Device component use); USES (Uses)  
(hole-blocking layers; organic **EL illuminations** and **displays** with high light extraction efficiency and long lifetime)
- IT 787577-68-8P 787577-77-9P 787577-80-4P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
(hole-blocking layers; organic **EL illuminations** and **displays** with high light extraction efficiency and long lifetime)
- IT 244-63-3,  $\beta$ -Carboline 244-69-9,  $\gamma$ -Carboline 245-08-9,  $\delta$ -Carboline 3001-15-8, 4,4'-Diodobiphenyl  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(in preparation of compds. for hole-blocking layers; organic **EL illuminations** and **displays** with high light extraction efficiency and long lifetime)

L31 ANSWER 12 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2005:1288783 HCAPLUS Full-text  
DOCUMENT NUMBER: 144:42962  
TITLE: Organic **electroluminescent**

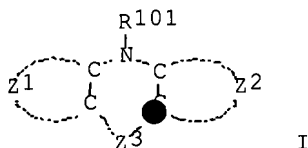
**device** for lighting and **display**  
apparatus  
INVENTOR(S): Otsu, Shinya; Suzurizato, Yoshiyuki; Kato,

PATENT ASSIGNEE(S): Eisaku; Kita, Hiroshi  
 SOURCE: Konica Minolta Holdings, Inc., Japan  
 Jpn. Kokai Tokkyo Koho, 95 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005340123	A	20051208	JP 2004-160771	20040531

PRIORITY APPLN. INFO.: <-- JP 2004-160771 20040531

OTHER SOURCE(S): MARPAT 144:42962  
 GI



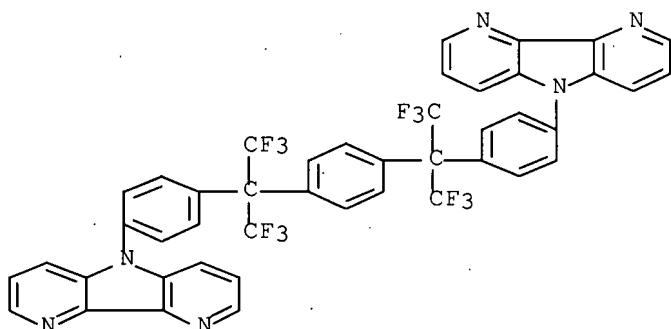
AB Disclosed is a phosphorescent organic **electroluminescent device**, suited for use as lighting and **display** apparatus, comprising a compound represented by I [Z1 = aromatic heterocyclic; Z2 = aromatic heterocyclic and aromatic hydrocarbon; Z3 = divalent linking group and single bond; R10 = H and substituting group] in an **electroluminescent** layer or its adjacent layer, and characterized in that the 0-0 band of the phosphorescence is  $\leq 480$  nm.

IT 869799-58-6

RL: DEV (Device component use); USES (Uses)  
 (phosphorescent organic **electroluminescent device**  
 for lighting and **display** apparatus)

RN 869799-58-6 HCAPLUS

CN 5H-Pyrrolo[3,2-b:4,5-b']dipyridine, 5,5'-[1,4-phenylenebis[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]-4,1-phenylene]]bis- (9CI)  
 (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06; G02F001-1335; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 28

ST phosphorescent org electroluminescent device  
lighting display

IT Illumination  
(apparatus; phosphorescent organic electroluminescent  
device for lighting and display apparatus)

IT Electroluminescent devices  
(displays; phosphorescent organic  
electroluminescent device for lighting and  
display apparatus)

IT Luminescent screens  
(electroluminescent; phosphorescent organic  
electroluminescent device for lighting and  
display apparatus)

IT Electroluminescent devices  
Phosphorescent substances  
(phosphorescent organic electroluminescent device  
for lighting and display apparatus)

IT 787578-04-5 787578-13-6 787582-73-4 848724-46-9 848724-55-0  
853016-93-0 869799-58-6 869799-59-7 869799-62-2  
869812-82-8  
RL: DEV (Device component use); USES (Uses)  
(phosphorescent organic electroluminescent device  
for lighting and display apparatus)

IT 359014-64-5 376367-93-0 376367-95-2 387859-70-3 664374-03-2  
665005-15-2 791110-49-1 870694-44-3  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(phosphorescent organic electroluminescent device  
for lighting and display apparatus)

IT 58328-31-7P 787577-68-8P 787577-80-4P 787578-19-2P  
787578-21-6P 787578-23-8P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(phosphorescent organic electroluminescent device  
for lighting and display apparatus)

IT 244-63-3,  $\beta$ -Carboline 244-69-9,  $\gamma$ -Carboline 245-08-9,  
 $\delta$ -Carboline 1095-78-9 3001-15-8,  
4,4'-Diiodobiphenyl 13029-08-8 787578-41-0 787578-44-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(phosphorescent organic electroluminescent device



for lighting and **display** apparatus)

L31 ANSWER 13 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:1283229 HCAPLUS Full-text  
 DOCUMENT NUMBER: 144:42959  
 TITLE: Organic **electroluminescence**  
**device** for lighting and **display**  
 apparatus  
 INVENTOR(S): Otsu, Shinya; Suzurizato, Yoshiyuki; Kato,  
 Eisaku; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 104 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005340122	A	20051208	JP 2004-160770	200405 31
			<--	
PRIORITY APPLN. INFO.:			JP 2004-160770	200405 31
			<--	

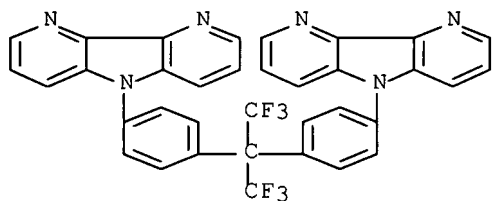
OTHER SOURCE(S): MARPAT 144:42959  
 GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Disclosed is a phosphorescent organic **electroluminescent device**, suited for use as lighting and **display apparatus**, comprising an **electroluminescent** layer containing the substance represented by I [Z1 = aromatic heterocyclic; Z2 = aromatic heterocyclic and aromatic hydrocarbon; Z3 = divalent linking group or single bond; and R101 = H and substituting group] and a hole blocking layer containing the substance selected from triazole derivative, 1,10-phenanthroline derivative, 1,3,4-oxadiazole derivative, triarylboron derivative, I, and the substance represented by II [Ra-g = H and substituting group; m = 1-3 integer; n = 0-2 integer].

IT **787577-59-7**  
 RL: DEV (Device component use); USES (Uses)  
 (phosphorescent organic **electroluminescence device**  
 for lighting and **display apparatus**)

RN 787577-59-7 HCAPLUS  
 CN 5H-Pyrrolo[3,2-b:4,5-b']dipyridine, 5,5'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06; H05B033-22; C07D209-82

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 28

ST phosphorescent org **electroluminescent device**  
hole transport lighting **display**

IT **Illumination**  
(apparatus; phosphorescent organic **electroluminescence device** for lighting and **display** apparatus)

IT **Electroluminescent devices**  
(displays; phosphorescent organic **electroluminescence device** for lighting and **display** apparatus)

IT Luminescent **screens**  
(**electroluminescent**; phosphorescent organic **electroluminescence device** for lighting and **display** apparatus)

IT **Electroluminescent devices**  
Phosphorescent substances  
(phosphorescent organic **electroluminescence device** for lighting and **display** apparatus)

IT 1662-01-7 2085-33-8 4733-39-5 138372-67-5 142289-08-5  
150405-69-9 444716-92-1 492446-97-6 **787577-59-7**  
787578-04-5 787578-07-8 787582-73-4 853016-94-1 869799-56-4  
869799-57-5 869799-59-7 869799-61-1 869799-62-2 869857-43-2  
869857-44-3  
RL: DEV (Device component use); USES (Uses)  
(phosphorescent organic **electroluminescence device** for lighting and **display** apparatus)

IT 787577-68-8P 787577-77-9P 787577-80-4P **787578-19-2P**  
**787578-21-6P 787578-23-8P**  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(phosphorescent organic **electroluminescence device** for lighting and **display** apparatus)

IT 244-63-3,  $\beta$ -Carboline 244-69-9,  $\gamma$ -Carboline 245-08-9,  
 $\delta$ -Carboline **1095-78-9** 3001-15-8,  
4,4'-Diiodobiphenyl 13029-08-8 787578-41-0 787578-44-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(phosphorescent organic **electroluminescence device** for lighting and **display** apparatus)

L31 ANSWER 14 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2005:1283178 HCAPLUS Full-text  
DOCUMENT NUMBER: 144:13907  
TITLE: Organic **electroluminescent device** for lighting and **display** apparatus

INVENTOR(S): Otsu, Shinya; Suzurizato, Yoshiyuki; Kato,  
Eisaku; Kita, Hiroshi  
PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 118 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005340121	A	20051208	JP 2004-160769	20040531
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PRIORITY APPLN. INFO.:			JP 2004-160769	20040531
				<--

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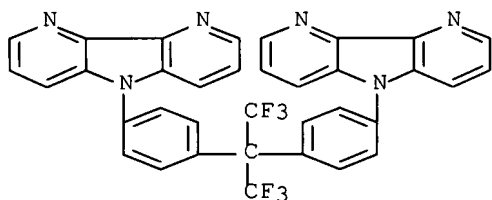
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Disclosed is a phosphorescent organic **electroluminescent device**, suited for use as lighting and **display** apparatus, comprising a hole transport layer containing the substance represented by I [R11-14 = alkyl and linking group; R'11-14 = alkyl, cycloalkoxy, aromatic hydrocarbon, etc.; L1 = biphenyl derivative, Ph derivative, and Ar1-L'-Ar2 [Ar1 and Ar2 = arylene, and heteroarylene; L' = alkylene and p-phenylene]; and m11-m14 = 0-4 integer], II [R21-23 = diarylamino, and diheteroarylamino; R'21-23 = alkyl, cycloalkyl, alkoxy, and alkylthio; and m21-m23 = 0-2 integer], III [R31-33 and R'31-33 = alkyl, aromatic hydrocarbon, aromatic heterocyclic, etc.; R''31-33 = alkyl, aromatic hydrocarbon, aromatic heterocyclic, etc.; and m31-33 = 0-3 integer], and IV [R41 = alkyl, aromatic hydrocarbon, and aromatic heterocyclic; R42 and R43 = alkyl, aromatic hydrocarbon, aromatic heterocyclic, etc.; m42 = 0-4 integer, m43 = 0-3 integer, and m4 = 2-6 integer; and L4 = nonconjugated linking group], and at least one of the organic layers containing the substance represented by V [Z1 = aromatic heterocyclic; Z2 = aromatic heterocyclic, and aromatic hydrocarbon; Z3 = divalent linking group or single bond; R101 = H and substituting group].

IT 787577-59-7  
RL: DEV (Device component use); USES (Uses)  
(phosphorescent organic **electroluminescent device**  
for lighting and **display** apparatus)

RN 787577-59-7 HCAPLUS

CN 5H-Pyrrolo[3,2-b:4,5-b']dipyridine, 5,5'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-22  
ICS C09K011-06; H05B033-14; C07D519-00

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 28

ST phosphorescent org **electroluminescent device**  
hole transport lighting **display**

IT **Illumination**  
(**apparatus**; phosphorescent organic **electroluminescent device** for lighting and **display apparatus**)

IT **Electroluminescent devices**  
(**displays**; phosphorescent organic **electroluminescent device** for lighting and **display apparatus**)

IT Luminescent **screens**  
(**electroluminescent**; phosphorescent organic **electroluminescent device** for lighting and **display apparatus**)

IT **Electroluminescent devices**  
Phosphorescent substances  
(phosphorescent organic **electroluminescent device** for lighting and **display apparatus**)

IT 787577-59-7 787578-07-8 853016-94-1 869799-56-4  
869799-57-5 **869799-58-6** 869799-59-7 869799-60-0  
869799-61-1 869799-62-2  
RL: DEV (Device component use); USES (Uses)  
(phosphorescent organic **electroluminescent device** for lighting and **display apparatus**)

IT 787577-68-8P 787577-77-9P 787577-80-4P **787578-19-2P**  
**787578-21-6P 787578-23-8P**  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(phosphorescent organic **electroluminescent device** for lighting and **display apparatus**)

IT 244-63-3,  $\beta$ -Carboline 244-69-9,  $\gamma$ -Carboline 245-08-9,  
 $\delta$ -Carboline **1095-78-9** 3001-15-8,  
4,4'-Diiodobiphenyl 27353-36-2, 4,4'-Dichloro-3,3'-bipyridine  
787578-41-0 787578-44-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(phosphorescent organic **electroluminescent device** for lighting and **display apparatus**)

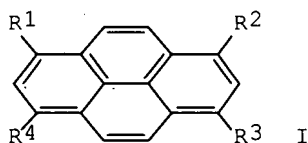
L31 ANSWER 15 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2005:1175780 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:442452  
TITLE: **Electroluminescent** fluorinated pyrenes  
and LED devices made with such compounds.  
INVENTOR(S): Ionkin, Alex Sergey; Wang, Ying  
PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 11 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005244645	A1	20051103	US 2004-833787	20040428

PRIORITY APPLN. INFO.: <--  
 US 2004-833787  
 20040428

OTHER SOURCE(S): MARPAT 143:442452  
 GI



AB Fluorinated pyrenes I (R = H or fluoro- or fluoroalkyl-substituted aryl group) prepared by Suzuki coupling from chloro-substituted pyrenes and fluoro-derivs. of arylboronic acid are used in an active layer of LED sandwiched between two elec. contact layers. Thus, 1,3,6,8-tetrakis-[(3,5-trifluoromethyl)phenyl]pyrene prepared by mixing 3.95 g of 1,3,6,8-tetrachloropyrene, 15.0 g of 3,5-bis(trifluoromethyl)phenylboronic acid, 1.33 g of tris(dibenzylideneacetone)dipalladium, 0.64 g of bis(1,1-dimethylethyl)trimethylsilylmethylphosphine, 18.95 g of cesium carbonate and 100 mL of dioxane 24 h at room temperature having quantum yield of fluorescence >0.6 was used in **OLED devices** fabricated by the thermal evaporation using ITO coated glass substrate, triphenylamine dye MPMP as a hole transport material, electron transport material, Al-complex as an electron injection material and carbazole biphenyl as a host material.

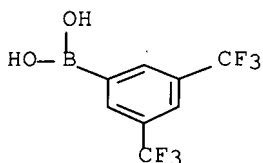
IT 73852-19-4, 3,5-Bis(trifluoromethyl)phenylboronic acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(luminescent pyrene precursor; fluorinated pyrenes used in an active layer of LED)

RN 73852-19-4 HCAPLUS

CN Boronic acid, B-[3,5-bis(trifluoromethyl)phenyl]- (CA INDEX NAME)



IC ICM B32B009-04  
ICS C07C025-13  
INCL 428411100; 570129000  
CC 45-5 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 73  
ST **electroluminescent** fluorinated pyrene active layer  
**electroluminescent device** use; fluorinated pyrene  
Suzuki coupling manuf  
IT **Electroluminescent devices**  
(displays; fluorinated pyrenes used in an active layer  
of LED)  
IT Luminescent **screens**  
(**electroluminescent**; fluorinated pyrenes used in an  
active layer of LED)  
IT **Electroluminescent devices**  
Luminescent substances  
Suzuki coupling reaction  
(fluorinated pyrenes used in an active layer of LED)  
IT 81-29-8, 1,3,6,8-Tetrachloropyrene 1582-24-7,  
Pentafluorophenylboronic acid 13716-10-4, Di-tert-  
butylchlorophosphine 18000-27-6, Trimethylsilyl)lithium  
73852-19-4, 3,5-Bis(trifluoromethyl)phenylboronic acid  
153254-09-2, 2,4-Bis(trifluoromethyl)phenylboronic acid  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(luminescent pyrene precursor; fluorinated pyrenes used in an  
active layer of LED)  
IT **868555-69-5P 868555-70-8P** 868555-71-9P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(luminescent pyrene; fluorinated pyrenes used in an active layer  
of LED)

L31 ANSWER 16 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:522753 HCAPLUS Full-text

DOCUMENT NUMBER: 143:34938

TITLE: Organic **electroluminescent**  
**device** for optical display and  
**illumination apparatus**

INVENTOR(S): Kato, Eisaku; Ueda, Noriko; Fukuda, Mitsuhiro;  
Oshiyama, Tomohiro; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 51 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005158289	A	20050616	JP 2003-390913	200311 20

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PRIORITY APPLN. INFO.:

JP 2003-390913

200311  
20

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OTHER SOURCE(S): MARPAT 143:34938

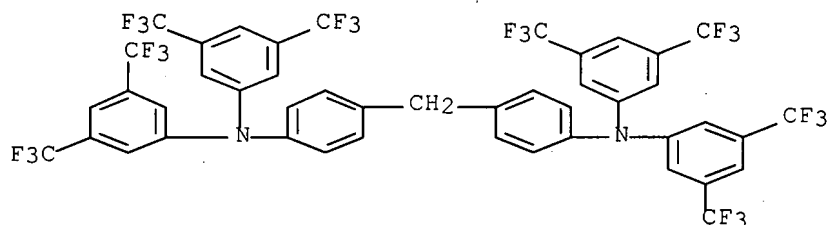
AB The invention relates to an organic **electroluminescent device**, suited for use in making an optical **display** and an **illumination apparatus**, comprising the organic compound represented by Ar1-L-Ar2 [Ar1 and Ar2 = aryl and aromatic heterocyclic groups; and L = alkylene]. The organic compound is used as a host material of a phosphorescent guest, a hole blocking material, and a hole transporting material.

IT 853016-95-2

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** for optical  
**display** and **illumination apparatus**)

RN 853016-95-2 HCAPLUS

CN Benzenamine, 4,4'-methylenebis[N,N-bis[3,5-  
bis(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)

ST org **electroluminescent device** optical  
**display illumination app**

IT Illumination

(**apparatus**; organic **electroluminescent device**  
for optical **display** and **illumination**  
**apparatus**)

IT Electroluminescent devices

Optical imaging devices

(organic **electroluminescent device** for optical  
**display** and **illumination apparatus**)

IT 58473-78-2 160176-63-6 853016-93-0 853016-94-1

853016-95-2 853016-96-3 853016-97-4 853016-98-5

853016-99-6 853017-00-2 853017-01-3

RL: DEV (Device component use); USES (Uses)

(organic **electroluminescent device** for optical  
**display** and **illumination apparatus**)

IT 607731-64-6P 848724-46-9P 848724-49-2P 848724-55-0P

848724-57-2P 848724-60-7P 853017-02-4P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)

(organic **electroluminescent device** for optical  
**display** and **illumination apparatus**)

IT 101-77-9 13029-09-9

RL: RCT (Reactant); RACT (Reactant or reagent)

(organic **electroluminescent device** for optical  
**display** and **illumination apparatus**)

L31 ANSWER 17 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:302625 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:363935  
 TITLE: Blue-emitting organic  
**electroluminescence** elements with high  
 brightness and long emission life, and  
**displays** and electric lights using them  
 INVENTOR(S): Oshiyama, Tomohiro; Kato, Eisaku; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 38 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005093159	A	20050407	JP 2003-322749	20030916

PRIORITY APPLN. INFO.: JP 2003-322749  
 20030916

OTHER SOURCE(S): MARPAT 142:363935

AB The **electroluminescence** (EL) elements have luminescent layers containing host  
 compds. and phosphorescence compds., wherein any layers consisting the elements  
 contain Ar<sub>m</sub>(Ar<sub>1</sub>)(Ar<sub>2</sub>)(Ar<sub>3</sub>)(Ar<sub>4</sub>)(Ar<sub>5</sub>) [Ar = 5-membered aromatic ring containing ≥1  
 N (e.g., carbazole, pyrrole); Ar<sub>1</sub>-5 = aryl, heteroaryl; m ≥0; R = H, substituent].

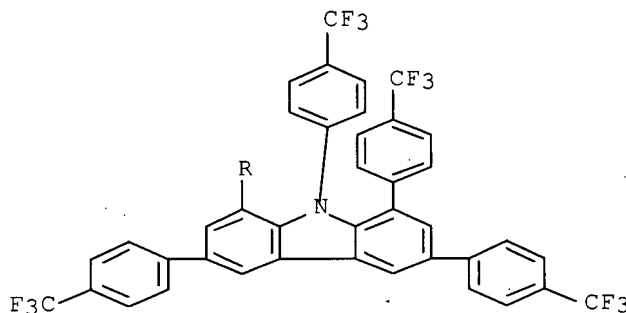
IT 849071-30-3

RL: DEV (Device component use); USES (Uses)  
 (blue-emitting organic **EL devices** with high  
 brightness and long emission life using phosphorescent materials)

RN 849071-30-3 HCAPLUS

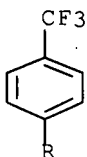
CN 9H-Carbazole, 1,3,6,8,9-pentakis[4-(trifluoromethyl)phenyl]- (9CI)  
 (CA INDEX NAME)

PAGE 1-A





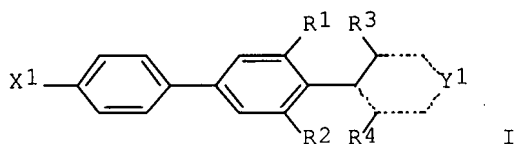
PAGE 2-A



- IC ICM H05B033-14  
ICS C09K011-06; H05B033-22
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 73, 76
- ST blue **electroluminescence device** host carbazole  
brightness; org **EL** white pyrrole host phosphorescence
- IT Electric lamps  
Phosphorescent substances  
(blue-emitting organic **EL devices** with high  
brightness and long emission life using phosphorescent materials)
- IT **Electroluminescent devices**  
(blue-emitting; blue-emitting organic **EL devices**  
with high brightness and long emission life using phosphorescent  
materials)
- IT **Electroluminescent devices**  
(displays; blue-emitting organic **EL**  
**devices** with high brightness and long emission life using  
phosphorescent materials)
- IT Luminescent **screens**  
Phosphors  
(**electroluminescent**; blue-emitting organic **EL**  
**devices** with high brightness and long emission life using  
phosphorescent materials)
- IT 849071-27-8 849071-29-0 849071-30-3 849071-31-4  
849071-32-5 849071-33-6 849071-34-7 849071-35-8  
849071-36-9 849071-37-0 849071-38-1  
RL: DEV (Device component use); USES (Uses)  
(blue-emitting organic **EL devices** with high  
brightness and long emission life using phosphorescent materials)
- IT 849071-28-9P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(blue-emitting organic **EL devices** with high  
brightness and long emission life using phosphorescent materials)
- IT 55119-09-0P, 1,3,6,8-Tetrabromocarbazole 849071-39-2P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(blue-emitting organic **EL devices** with high  
brightness and long emission life using phosphorescent materials)
- IT 86-74-8, Carbazole 98-80-6, Phenylboric acid 591-50-4,  
Iodobenzene  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(blue-emitting organic **EL devices** with high  
brightness and long emission life using phosphorescent materials)
- IT 94928-86-6 344796-24-3 376367-93-0  
RL: DEV (Device component use); USES (Uses)  
(phosphorescent substance; blue-emitting organic **EL**  
**devices** with high brightness and long emission life using  
phosphorescent materials)

L31 ANSWER 18 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:281222 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:363435  
 TITLE: Organic **electroluminescent devices** containing specific biphenyl compounds and LCD therewith  
 INVENTOR(S): Fukuda, Mitsuhiro; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 50 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005085658	A	20050331	JP 2003-317930	20030910
			<--	
PRIORITY APPLN. INFO.:			JP 2003-317930	20030910
			<--	
OTHER SOURCE(S):			MARPAT 142:363435	
GI				



AB The devices contain, in one or more of organic compound layers, compds. I [X1 = Q1 or Q2 [Z1, Z2 = C: or C(R7); (R7 = H, substituent); R5, R6 = H, substituent; Ar1, Ar2 = aromatic group]; Y1 = 6-membered aromatic ring substituted with X1; R1-R4 = H, substituent (R1 = R2 = R3 = R4 ≠ H)], X2-p-C6H4-m-C6H4L2X'2 (X2, X'2 = the same as X1; L2 = heterocycle, O-containing bivalent linking group), and/or X3-p-C6H4-C6H4L3CR8R9L'3X'3 [X3, X'3 = the same as X1; L3 = single bond, O, alkylene; R8, R9 = substituent including (fluoro)hydrocarbyl as the one or both; L'3 = single bond or bivalent linking group]. The compds. may work as hole-transporting host of phosphorescent substances in the layers.

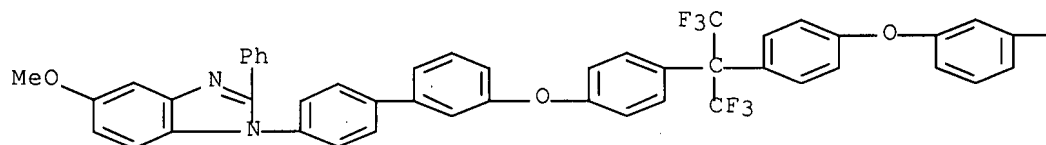
IT 848836-86-2

RL: DEV (Device component use); USES (Uses)  
 (emitting layers; long-life organic LED containing sp. biphenyl compds.  
 and showing high luminescent efficiency for LCD)

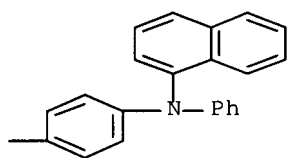
RN 848836-86-2 HCAPLUS

CN 1-Naphthalenamine, N-phenyl-N-[3'-[4-[2,2,2-trifluoro-1-[4-[[4'-(5-methoxy-2-phenyl-1H-benzimidazol-1-yl)][1,1'-biphenyl]-3-yl]oxy]phenyl]-1-(trifluoromethyl)ethyl]phenoxy][1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM H05B033-14  
ICS C09K011-06; G02F001-1335; H05B033-22

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 74

ST LCD backlight **org** LED **luminescent** efficiency;  
biphenyl compd **electroluminescent device**  
durability LCD backlight; hole transporting phosphorescent host  
**electroluminescent** efficiency

IT Liquid crystal **displays**  
Phosphorescent substances  
(long-life organic LED containing sp. biphenyl compds. and showing high  
luminescent efficiency for LCD)

IT **Electroluminescent devices**  
(organic; long-life organic LED containing sp. biphenyl compds. and showing  
high luminescent efficiency for LCD)

IT 58328-31-7, CBP 848836-80-6 848836-81-7 848836-82-8  
848836-83-9 848836-84-0 848836-85-1 **848836-86-2**  
848836-87-3 848836-88-4 848836-90-8 848836-91-9  
**848836-92-0** 848836-95-3

RL: DEV (Device component use); USES (Uses)  
(emitting layers; long-life organic LED containing sp. biphenyl compds.  
and showing high luminescent efficiency for LCD)

L31 ANSWER 19 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:253712 HCAPLUS Full-text

DOCUMENT NUMBER: 142:326060

TITLE: Liquid crystal **displays** and  
**electroluminescent displays**,  
manufacture thereof, method for sealing them,  
sealants therefor, and cationically photocurable  
resin compositions therefor

INVENTOR(S): Nishizeki, Masato; Okubo, Kimihiko

PATENT ASSIGNEE(S): Konica Minolta Medical &amp; Graphic, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 77 pp.

DOCUMENT TYPE: CODEN: JKXXAF  
 LANGUAGE: Patent  
 FAMILY ACC. NUM. COUNT: 1 Japanese  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005075885	A	20050324	JP 2003-306275	20030829
			<--	
PRIORITY APPLN. INFO.:			JP 2003-306275	20030829
			<--	
OTHER SOURCE(S):		MARPAT 142:326060		
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

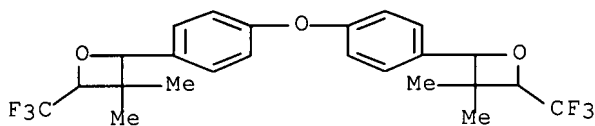
AB The compns., showing good curability at low temperature to give seals with good adhesiveness and moisture resistance, comprise (A) cationically polymerizable compds. (e.g., vinyl ethers, epoxides, oxetanes), (B) photoacid generators (e.g., onium compds.), (C) bisoxetanes chosen from I (R101-R104 = H, substituent; R105 = alkoxy, aryloxy; R106 = substituent; m1 = 0, 1, 2; n1 = 0-3), II (R201-R204 = H, substituent; R205, R206, m2, n2 = same as R105, R106, m1, n1, resp.), III (R301-R304 = H, substituent; R305, R306 = substituent; m3, n3 = 0-4), and/or 2 addnl. Markush structures, and optionally (D) inorg. fillers and (E) silane coupling agents. The bisoxetanes are effective for increasing curing conversion. Opposed substrates of LCD or **EL displays** are sealed with the compns.

IT 808168-42-5P

RL: DEV (Device component use); IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)

RN 808168-42-5 HCAPLUS

CN Oxetane, 2,2'-(oxydi-4,1-phenylene)bis[3,3-dimethyl-4-(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM C08G065-26

ICS C08K003-00; C08K005-5415; C08L071-02

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 42, 73

ST LCD **EL display** cationically photocurable

- sealant; sulfonium photoacid generator epoxy oxetane sealant; epoxy oxetane sealant bisoxetane curing conversion increasing
- IT Liquid crystal **displays**  
Sealing  
Sealing compositions  
(cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Polyethers, preparation  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Silanes  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(coupling agents; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT **Electroluminescent devices**  
(**displays**; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Luminescent **screens**  
(**electroluminescent**; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Polyethers, preparation  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(epoxy; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Inorganic compounds  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(fillers; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Onium compounds  
RL: CAT (Catalyst use); DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(iodonium, di-Ph, photoacid generators; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Onium compounds  
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)  
(photoacid generators; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Epoxy resins, preparation  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyether-; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Coupling agents

- (silane; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Sulfonium compounds  
RL: CAT (Catalyst use); DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(tri-Ph, photoacid generators; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT Ethers, reactions  
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)  
(vinyl; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT 220520-33-2, 3-Ethyl-3-[[3-(triethoxysilyl)propoxy]methyl]oxetane  
RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(Aron Oxetane OXT 610, coupling agents; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT 802915-08-8P 802915-09-9P **808168-42-5P** 808168-48-1P  
808168-56-1P 808168-60-7P **847951-17-1P**  
**847951-18-2P** 847951-19-3P **847951-20-6P**  
847951-21-7P **847951-22-8P**  
RL: DEV (Device component use); IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT 847951-25-1P 847951-26-2P 847951-27-3P 847951-28-4P  
847951-29-5P 847951-30-8P 847951-31-9P 847951-32-0P  
847951-33-1P 847951-35-3P 847951-36-4P 847951-37-5P  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT 7631-86-9, Silica, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(fillers; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT 34074-28-7P 808168-37-8P 808168-38-9P **808168-43-6P**  
808168-45-8P 808168-49-2P **847951-23-9P** 847951-24-0P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(in preparation of bisoxetanes; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT 78-84-2, Isobutyraldehyde 101-84-8, Diphenyl ether 123-08-0,  
4-Hydroxybenzaldehyde 4300-97-4, 3-Chloro-2,2-dimethylpropionyl chloride 6315-52-2, Ethylene glycol di-p-toluenesulfonate 22308-12-9 103439-26-5  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(in preparation of bisoxetanes; cationically photocurable resin compns. with good curability and adhesiveness for sealing of LCD or **EL** substrates)
- IT 104558-95-4, Cyracure UVI 6990 205944-57-6, Adeka Optomer SP 152

847951-39-7 847951-41-1 847951-43-3 848186-63-0, CI 5012  
 RL: CAT (Catalyst use); DEV (Device component use); TEM (Technical  
 or engineered material use); USES (Uses)  
 (photoacid generators; cationically photocurable resin compns.  
 with good curability and adhesiveness for sealing of LCD or  
 EL substrates)

L31 ANSWER 20 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:158711 HCAPLUS Full-text

DOCUMENT NUMBER: 142:249456

TITLE: **Electroluminescent polymers, organic  
 electroluminescent devices and  
 displays**

INVENTOR(S): Tsukioka, Miyuki; Sunaga, Tomoyasu; Ishii,  
 Junichi; Yanagibori, Susumu

PATENT ASSIGNEE(S): Sony Chemicals Corp., Japan

SOURCE: PCT Int. Appl., 41 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005016992	A1	20050224	WO 2004-JP11175	20040804

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 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR,  
 KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,  
 MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE,  
 SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,  
 VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL,  
 PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
 GW, ML, MR, NE, SN, TD, TG

JP 2005060571	A	20050310	JP 2003-293584	20030814
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JP 3915757	B2	20070516		
CN 1867603	A	20061122	CN 2004-80030014	20040804

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US 2007032632	A1	20070208	US 2006-567124	20060206
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PRIORITY APPLN. INFO.:		JP 2003-293584	A	20030814
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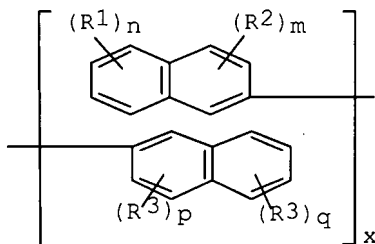
WO 2004-JP11175	W
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AB Novel **electroluminescent (EL)** polymers which little form cohesion structure in film formation and little cause morphol. change even after film formation and which exhibit stable **EL** characteristics. The polymers comprise binaphthyl derivative structural units represented by the general formula I ( $R_1$ -4 = substituent; each moiety represented by both a dotted line and a solid line represents an unsatd. double bond or a saturated single bond;  $m, p = 0-2$ ;  $n, o = 0-8$ ;  $x$  = the mole fraction of the binaphthyl derivative structural units) and aryl structural units represented by the general formula  $-[Ar]_y-$  ( $Ar$  = aryl structural unit capable of forming **electroluminescent**  $\pi$ -conjugated polymer;  $y$  = the mole fraction of the aryl structural units).

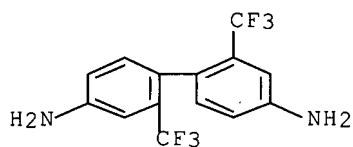
IT **341-58-2**, 2,2'-Bis(trifluoromethyl)-4,4'-diaminobiphenyl

RL: RCT (Reactant); RACT (Reactant or reagent)

(monomer preparation; **electroluminescent**  $\pi$ -conjugated polymers, organic **electroluminescent devices** and **displays**)

RN 341-58-2 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, 2,2'-bis(trifluoromethyl)- (CA INDEX NAME)



IC ICM C08G061-10

ICS C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 38, 73

ST **electroluminescent**  $\pi$  conjugated polymer org **EL device display**

IT Polymers, properties

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(conjugated; **electroluminescent**  $\pi$ -conjugated polymers, organic **electroluminescent devices** and



displays)  
IT Electroluminescent devices  
(displays; electroluminescent  $\pi$ -conjugated  
polymers, organic electroluminescent devices and  
displays)  
IT Luminescent screens  
(electroluminescent; electroluminescent  
 $\pi$ -conjugated polymers, organic electroluminescent  
devices and displays)  
IT 845526-92-3DP, bis-(di-p-methylphenylaminophenylene) terminated  
845526-92-3P 845526-93-4DP, bis-(di-p-methylphenylaminophenylene)  
845526-94-5P 845526-95-6P 845526-96-7P 845526-97-8P  
845526-98-9P 845526-99-0P  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
preparation); TEM (Technical or engineered material use); PREP  
(Preparation); USES (Uses)  
(electroluminescent  $\pi$ -conjugated polymers, organic  
electroluminescent devices and displays  
)  
IT 111-83-1, 1-Bromooctane 341-58-2, 2,2'-  
Bis(trifluoromethyl)-4,4'-diaminobiphenyl 591-18-4,  
3-Bromo-1-iodobenzene 602-09-5, 2,2'-Dihydroxy-1,1'-binaphthyl  
620-93-9, Di(p-tolyl)amine 1034-39-5, Triphenylphosphinedibromide  
1806-29-7, 2,2'-Biphenol 2243-62-1, 1,5-Diaminonaphthalene  
2425-95-8, 2,5-Bis(4-aminophenyl)-1,3,4-oxadiazole 7787-70-4,  
Copper (i) bromide 10035-10-6, Hydrogen bromide, reactions  
16433-88-8, 2,7-Dibromofluorene 18908-66-2, 1-Bromo-2-ethylhexane  
61676-62-8, 2-Isopropoxy-4,4,5,5-tetramethyl-1,3,2-dioxaborolane  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(monomer preparation; electroluminescent  $\pi$ -conjugated  
polymers, organic electroluminescent devices and  
displays)  
IT 7351-74-8P, 1,5-Dibromonaphthalene 13029-09-9P,  
2,2'-Dibromo-1,1'-biphenyl 19542-05-3P, 2,5-Bis(4-bromophenyl)-  
1,3,4-oxadiazole 74866-28-7P, 2,2'-Dibromo-1,1'-binaphthyl  
176714-72-0P 188200-93-3P, 2,7-Dibromo-9,9-di(2-  
ethylhexyl)fluorene 196207-58-6P 198964-46-4P,  
2,7-Dibromo-9,9-dioctylfluorene 845526-91-2P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)  
(monomer preparation; electroluminescent  $\pi$ -conjugated  
polymers, organic electroluminescent devices and  
displays)  
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN  
THE RE FORMAT  
  
L31 ANSWER 21 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2005:140278 HCAPLUS Full-text  
DOCUMENT NUMBER: 142:229127  
TITLE: Organic electroluminescent elements  
with low emission voltage and power consumption  
and lighting apparatus and displays  
using them  
INVENTOR(S): Kato, Eisaku; Oshiyama, Tomohiro; Suzurizato,  
Yoshiyuki; Kita, Hiroshi  
PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 38 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005044790	A	20050217	JP 2004-195396	20040701

PRIORITY APPLN. INFO.: <-- JP 2003-193521 A 20030708 <--

OTHER SOURCE(S): MARPAT 142:229127

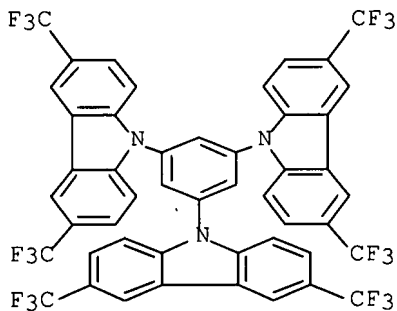
AB The elements, useful for blue- or white-emitting backlights for LCD, have layers containing compds. L1Xn [L1 = polyvalent hydrocarbon or aromatic linking group; X = (un)substituted N-containing aromatic heterocyclic group linked to L1 at N; n ≥ 2] adjacent to **light-emitting** layers between anodes and cathodes. The layers show good hole-barrier properties.

IT 844510-62-9

RL: DEV (Device component use); USES (Uses)  
 (hole-barrier layer; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

RN 844510-62-9 HCAPLUS

CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[3,6-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73

ST LCD backlight blue emitting org **EL**;  
**electroluminescent device** hole barrier adjacent  
 layer; **EL display** low light  
 emission voltage

IT **Electroluminescent devices**

(blue-emitting; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT **Electroluminescent devices**

(**displays**; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT **Luminescent screens**  
(**electroluminescent**; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT Light sources  
(for LCD; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT Liquid crystal **displays**  
(organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT **Electroluminescent devices**  
(white-emitting; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT 844510-61-8 844510-62-9 844510-64-1 844510-65-2  
844510-66-3 844510-68-5 844510-70-9  
844510-71-0 844510-72-1 844510-73-2  
844510-74-3 844510-75-4 844510-76-5  
RL: DEV (Device component use); USES (Uses)  
(hole-barrier layer; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT 376367-93-0  
RL: DEV (Device component use); USES (Uses)  
(phosphor, **light-emitting** layer; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

L31 ANSWER 22 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:138480 HCAPLUS Full-text

DOCUMENT NUMBER: 142:249440

TITLE: Organic **electroluminescent** elements with improved brightness, emission efficiency, and durability and lighting apparatus and **displays** using them

INVENTOR(S): Oshiyama, Tomohiro; Kato, Eisaku; Suzurizato, Yoshiyuki; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 57 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005044791	A	20050217	JP 2004-195397	20040701

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PRIORITY APPLN. INFO.:

JP 2003-193520 A

200307

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OTHER SOURCE(S): MARPAT 142:249440

AB The elements, useful for blue- or white-emitting backlights for LCD, have layers containing triarylamine derivs. bearing electron-withdrawing groups adjacent to **light-emitting** layers between anodes and cathodes. The layers show good hole-barrier properties.

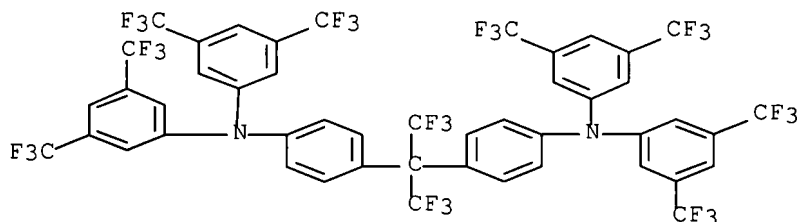
IT 817638-43-0

RL: DEV (Device component use); USES (Uses)

(hole-barrier layer; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

RN 817638-43-0 HCAPLUS

CN Benzenamine, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis [N,N-bis[3,5-bis(trifluoromethyl)phenyl]- (CA INDEX NAME)



IC ICM H05B033-22

ICS C07C211-56; C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST LCD backlight blue org **EL** brightness;  
**electroluminescent device** allylamine hole barrier  
durability; **EL display** triallylamine  
light emission efficiency

IT **Electroluminescent devices**

(blue-emitting; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT **Electroluminescent devices**

(**displays**; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT **Luminescent screens**

(**electroluminescent**; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT Light sources

(for LCD; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT Liquid crystal **displays**

(organic **EL** elements containing electron-withdrawing triarylamines in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT **Electroluminescent devices**

(white-emitting; organic **EL** elements containing electron-withdrawing triarylamines in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT 1821-41-6 152842-19-8 817638-43-0 817638-44-1  
817638-51-0 844665-51-6 844665-52-7  
844665-53-8 844665-54-9 844665-55-0  
844665-56-1 844665-57-2 844665-58-3  
844665-59-4

RL: DEV (Device component use); USES (Uses)

(hole-barrier layer; organic **EL** elements containing electron-withdrawing triarylamines in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT 94928-86-6 343978-79-0 376367-93-0

RL: DEV (Device component use); USES (Uses)

(phosphor, **light-emitting** layer; organic **EL** elements containing electron-withdrawing triarylamines in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

L31 ANSWER 23 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:35085 HCAPLUS Full-text

DOCUMENT NUMBER: 142:102910

TITLE: Organic **electroluminescent device, illuminating device, and display**

INVENTOR(S): Oshiyama, Tomohiro; Kita, Hiroshi; Katoh, Eisaku

PATENT ASSIGNEE(S): Konica Minolta Holding, Inc., Japan

SOURCE: PCT Int. Appl., 80 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005004549	A1	20050113	WO 2004-JP9391	20040625

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1651013 A1 20060426 EP 2004-746860

200406

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
PL, SK, HR

CN 1817066 .

A

20060809

CN 2004-80019019

200406

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US 2007099025

A1

20070503

US 2005-562652

*current application*

200512

27

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PRIORITY APPLN. INFO.:

JP 2003-193519

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WO 2004-JP9391

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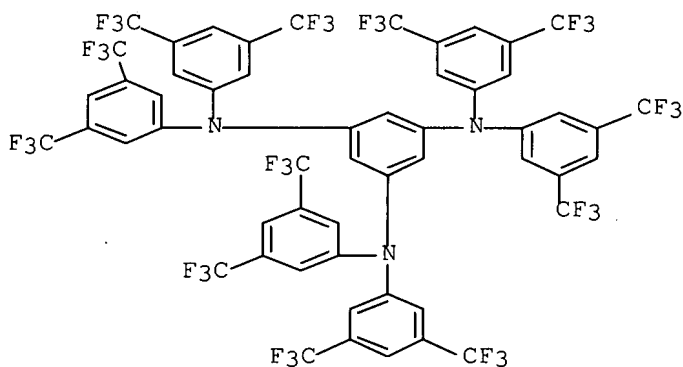
AB An organic **electroluminescent device** comprising at least a **light-emitting layer** containing a phosphorescent compound between an anode and a cathode is characterized by comprising an adjoining layer so arranged between the **light-emitting layer** and the cathode as to be adjacent to the **light-emitting layer** and containing a compound with an electron-withdrawing group having an HOMO at -5.7 eV to -7.0 eV and an LUMO at -1.3 eV to -2.3 eV.

IT 817638-41-8

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device**,  
**illumination apparatus** and **display**)

RN 817638-41-8 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-hexakis[3,5-bis(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS H05B033-14; G02F001-1335

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)

Section cross-reference(s): 74

ST org **electroluminescent device display**  
**illumination app**

IT Light sources  
(backlight; organic electroluminescent device,  
illumination apparatus and display)

IT Electroluminescent devices  
(displays; organic electroluminescent  
device, illumination apparatus and  
display)

IT Luminescent screens  
(electroluminescent; organic  
electroluminescent device, illumination  
apparatus and display)

IT Electroluminescent devices  
Phosphorescent substances  
(organic electroluminescent device,  
illumination apparatus and display)

IT 372956-40-6 817638-41-8 817638-42-9  
817638-43-0 817638-44-1 817638-45-2  
817638-46-3 817638-47-4 817638-48-5  
817638-49-6 817638-50-9 817638-51-0  
817638-53-2 817638-55-4 817638-56-5  
RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent device,  
illumination apparatus and display)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN  
THE RE FORMAT

L31 ANSWER 24 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1929 HCAPLUS Full-text

DOCUMENT NUMBER: 142:102845

TITLE: Organometallic complex and organic  
electroluminescent device  
employing the same

INVENTOR(S): Son, Hae-jung; Han, Eun-sil; Lee, Jong-hyoun;  
Pu, Lyong-sun; Chang, Seok; Lyu, Yi-yeol;  
Ragini, Das Rupasree

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 14 pp.  
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004265633	A1	20041230	US 2004-875651	200406 25
			<--	
KR 2005001794	A	20050107	KR 2003-42129	200306 26
			<--	
JP 2005038847	A	20050210	JP 2004-188047	200406 25
			<--	
CN 1578557	A	20050209	CN 2004-10062066	

200406  
28

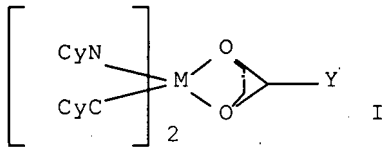
PRIORITY APPLN. INFO.:

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KR 2003-42129

A

200306  
26OTHER SOURCE(S): MARPAT 142:102845  
GI

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AB Organometallic complexes are described by the general formula I (M = Ir, Pt, Rh or Pd; CyN = (un)substituted C3-60 heterocyclic group having a nitrogen bonded to M, (un)substituted C3-60 aryl group having a nitrogen bonded to M, or (un)substituted C3-60 heteroaryl group having a nitrogen bonded to M; CyC = (un)substituted C4-60 carbocyclic group having a carbon bonded to M, (un)substituted C3-60 heterocyclic group having a carbon bonded to M, (un)substituted C3-60 aryl group having a carbon bonded to M, or (un)substituted C3-60 heteroaryl group having a carbon bonded to M; and Y = (un)substituted C2-30 aryl group or (un)substituted C2-30 heteroaryl group). Organic **electroluminescent devices** and **displays** employing the compds. are also described.

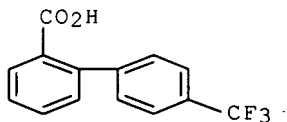
IT 84392-17-6, 4'-(Trifluoromethyl)-2-biphenylcarboxylic acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(organometallic complexes with carboxylic acid ligands and organic **electroluminescent devices** employing them)

RN 84392-17-6 HCAPLUS

CN [1,1'-Biphenyl]-2-carboxylic acid, 4'-(trifluoromethyl)- (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; C07D213-02

INCL 428690000; 428917000; 313504000; 546004000; 546006000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 29, 76

ST luminescent organometallic complex carboxylic acid ligand org **electroluminescent device**

IT **Electroluminescent devices**

(**displays**, organic; organometallic complexes with carboxylic acid ligands and organic **electroluminescent devices** employing them)

IT **Luminescent screens**



- (**electroluminescent, organic**; organometallic complexes with carboxylic acid ligands and organic **electroluminescent devices** employing them)
- IT **Electroluminescent devices**  
(organic; organometallic complexes with carboxylic acid ligands and organic **electroluminescent devices** employing them)
- IT Luminescent substances  
(organometallic complexes with carboxylic acid ligands and organic **electroluminescent devices** employing them)
- IT 7440-05-3D, Palladium, compds. 7440-06-4D, Platinum, compds.  
7440-16-6D, Rhodium, compds.  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(organometallic complexes with carboxylic acid ligands and organic **electroluminescent devices** employing them)
- IT 816417-27-3P 816417-28-4P 816417-29-5P 816417-30-8P  
RL: DEV (Device component use); MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(organometallic complexes with carboxylic acid ligands and organic **electroluminescent devices** employing them)
- IT 59-67-6, Nicotinic acid, reactions 109-04-6, 2-Bromopyridine  
20826-04-4, 5-Bromonicotinic acid **84392-17-6**,  
4'-(Trifluoromethyl)-2-biphenylcarboxylic acid 144025-03-6,  
2,4-Difluorophenylboronic acid 158063-66-2, 4-  
(Trifluoromethyl)nicotinic acid 391611-77-1  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organometallic complexes with carboxylic acid ligands and organic **electroluminescent devices** employing them)
- IT 391604-55-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(organometallic complexes with carboxylic acid ligands and organic **electroluminescent devices** employing them)

L31 ANSWER 25 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:1038543 HCAPLUS Full-text

DOCUMENT NUMBER: 142:29775

TITLE: Organic **electroluminescent (EL)**  
**device** and  
**electroluminescent display**  
(ELD) and illumination assembled with  
the same

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Oshiyama,  
Tomohiro; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 61 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004342391	A	20041202	JP 2003-135706	200305
				14

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PRIORITY APPLN. INFO.:

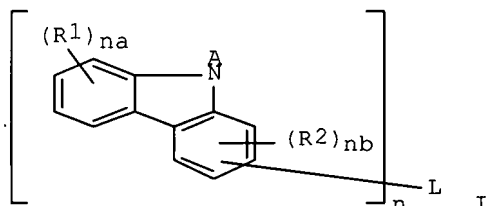
JP 2003-135706

200305

14

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OTHER SOURCE(S): MARPAT 142:29775  
GI



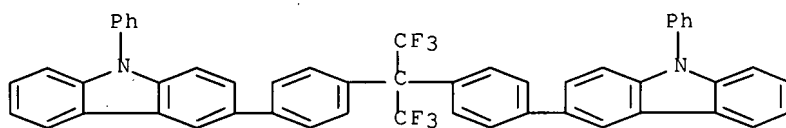
AB The **electroluminescent device** has a **light-emitting layer** containing phosphorescent compds. and involves 9-azafluorene derivs. represented by the general formula I (A = alkyl, cycloalkyl, alkyl, aryl, heteroaryl; R1, R2 = H, substituent; na = 0-4 integer; nb = 0-3 integer; n = 2-4 integer; L = n-valent linking group), preferably, in the **light-emitting layer**. The **EL device** shows high luminance and long half life.

IT 799559-67-4

RL: DEV (Device component use); USES (Uses)  
(host; organic **electroluminescent (EL)**  
**device** containing 9-azafluorene derivs. for  
**electroluminescent display (ELD)** and  
**illumination**)

RN 799559-67-4 HCAPLUS

CN 9H-Carbazole, 3,3'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]d  
i-4,1-phenylene]bis[9-phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; C07D209-86

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)

Section cross-reference(s): 74

ST **illumination org electroluminescent**  
**device** azafluorene deriv; org **electroluminescent**  
**display** azafluorene deriv host

IT **Electroluminescent devices**  
(displays; organic **electroluminescent (**  
**EL)** **device** containing 9-azafluorene derivs. for  
**electroluminescent display (ELD)** and  
**illumination**)

IT **Luminescent screens**

- (electroluminescent; organic  
electroluminescent (EL) device containing  
9-azafluorene derivs. for electroluminescent  
display (ELD) and illumination)
- IT Electric lamps  
Phosphors  
(organic electroluminescent (EL) device  
containing 9-azafluorene derivs. for electroluminescent  
display (ELD) and illumination)
- IT 2085-33-8, Alq3  
RL: DEV (Device component use); USES (Uses)  
(electron-transporting layer, hole-barrier layer; organic  
electroluminescent (EL) device containing  
9-azafluorene derivs. for electroluminescent  
display (ELD) and illumination)
- IT 4733-39-5 138372-67-5 142289-08-5 203799-76-2 492446-89-6  
492446-97-6 799560-35-3  
RL: DEV (Device component use); USES (Uses)  
(hole-barrier layer; organic electroluminescent (EL) device containing 9-azafluorene derivs. for  
electroluminescent display (ELD) and  
illumination)
- IT 123847-85-8  
RL: DEV (Device component use); USES (Uses)  
(hole-transporting layer; organic electroluminescent (EL) device containing 9-azafluorene derivs. for  
electroluminescent display (ELD) and  
illumination)
- IT 799559-67-4 799559-70-9 799559-74-3  
799559-82-3 799559-85-6 799559-88-9 799559-92-5 799559-96-9  
799559-99-2 799560-03-5 799560-07-9 799560-10-4 799560-14-8  
799560-17-1 799560-20-6 799560-23-9 799560-26-2  
RL: DEV (Device component use); USES (Uses)  
(host; organic electroluminescent (EL)  
device containing 9-azafluorene derivs. for  
electroluminescent display (ELD) and  
illumination)
- IT 799559-78-7P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(host; organic electroluminescent (EL)  
device containing 9-azafluorene derivs. for  
electroluminescent display (ELD) and  
illumination)
- IT 799560-05-7  
RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent (EL) device  
containing 9-azafluorene derivs. for electroluminescent  
display (ELD) and illumination)
- IT 132-32-1, 3-Amino-9-ethylcarbazole  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic electroluminescent (EL) device  
containing 9-azafluorene derivs. for electroluminescent  
display (ELD) and illumination)
- IT 344796-22-1 376367-93-0  
RL: DEV (Device component use); USES (Uses)  
(phosphorescent compound; organic electroluminescent (EL) device containing 9-azafluorene derivs. for  
electroluminescent display (ELD) and  
illumination)

L31 ANSWER 26 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:973456 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:122672  
 TITLE: New Carbazole-Oxadiazole Dyads for  
**Electroluminescent Devices:**  
 Influence of Acceptor Substituents on  
 Luminescent and Thermal Properties  
 AUTHOR(S): Thomas, K. R. Justin; Lin, Jiann T.; Tao,  
 Yu-Tai; Chuen, Chang-Hao  
 CORPORATE SOURCE: Institute of Chemistry, Academia Sinica, Taipei,  
 Taiwan  
 SOURCE: Chemistry of Materials (2004), 16(25),  
 5437-5444  
 CODEN: CMATEX; ISSN: 0897-4756  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

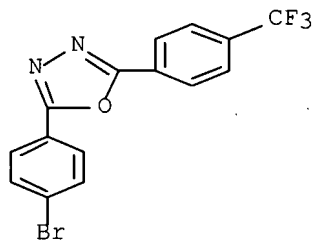
AB Carbazole-oxadiazole dyads linked by amino functionality is prepared in good yields by C-N coupling reactions catalyzed by Pd(dba)<sub>2</sub>/P(CMe<sub>3</sub>)<sub>3</sub> under basic conditions in toluene. The compds. possess addnl. electron-withdrawing groups such as CF<sub>3</sub> and CN either on oxadiazole or on carbazole nucleus. The placement of CF<sub>3</sub> on the oxadiazole end enhances the electron deficiency of the oxadiazole unit, while the CN substituent at the carbazole nucleus decreases the donor strength of carbazole. This results in slight alterations in the oxidation potentials and thermal properties of the resulting dyads. This also leads to a pathway for fine-tuning the energy levels and amorphous morphol. in these dyads. While CN groups alter by .apprx.0.2 eV the energy levels, a counterproductive T<sub>g</sub> reduction/thermal instability is observed for the CF<sub>3</sub> derivs. All of these derivs. **display** solvent-dependent emission profiles with the solid-state emission occurring in the cyan region. **Electroluminescent devices** fabricated using these compds. as hole-transporting layer and Alq<sub>3</sub> or TPBI as the electron-transporting layer emit cyan color. The emission in most cases arises from the HTL layer. However, slight distortions in shape and peak position of the EL spectra were noticed, which were attributed to either the mixing of emissions from HTL and ETL layer or the complex formation between the HTL and ETL materials. Energetics governing the confinement of excitons in the emissive layer is critically analyzed.

IT 821807-60-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (carbazole-oxadiazole dyads for LEDs synthesized using)

RN 821807-60-7 HCAPLUS

CN 1,3,4-Oxadiazole, 2-(4-bromophenyl)-5-[4-(trifluoromethyl)phenyl]-  
 (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
 Related Properties)  
 Section cross-reference(s): 22, 28, 69, 72, 76, 77

ST carbazole oxadiazole dyad acceptor substituent luminescence thermal property LED; **electroluminescence** carbazole oxadiazole dyad deriv acceptor substituent LED; cyclic voltammetry carbazole oxadiazole dyad deriv acceptor substituent LED; LUMO carbazole oxadiazole dyad deriv acceptor substituent LED; HOMO carbazole oxadiazole dyad deriv acceptor substituent LED; UV visible spectra carbazole oxadiazole dyad deriv acceptor substituent; FAB mass spectra carbazole oxadiazole dyad deriv acceptor substituent; NMR spectra carbazole oxadiazole dyad deriv acceptor substituent; oxidn potential carbazole oxadiazole dyad deriv acceptor substituent; decompn temp carbazole oxadiazole dyad deriv acceptor substituent; glass transition temp carbazole oxadiazole dyad deriv acceptor substituent; current voltage LED carbazole oxadiazole dyad deriv acceptor substituent

IT **Electroluminescent devices**  
Glass transition temperature  
Inductive effect  
Luminescence  
Oxidation potential  
(carbazole-oxadiazole dyads for LEDs with acceptor substituent effects on luminescent and thermal properties)

IT Color  
Cyclic voltammetry  
Fast atom bombardment mass spectra  
HOMO (molecular orbital)  
LUMO (molecular orbital)  
Luminescence, **electroluminescence**  
NMR (nuclear magnetic resonance)  
UV and visible spectra  
(of carbazole-oxadiazole dyads for LEDs)

IT 220843-12-9 436800-48-5 **821807-60-7** 821807-61-8  
821807-62-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(carbazole-oxadiazole dyads for LEDs synthesized using)

IT **821807-55-0P** 821807-56-1P **821807-57-2P**  
821807-58-3P **821807-59-4P**  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(carbazole-oxadiazole dyads for LEDs with acceptor substituent effects on luminescent and thermal properties)

REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L31 ANSWER 27 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:935420 HCAPLUS Full-text

DOCUMENT NUMBER: 141:403269

TITLE: Organic **electroluminescent device** for illumination  
**apparatus** and optical **display**

INVENTOR(S): Kita, Hiroshi; Yamada, Taketoshi; Suzurizato, Yoshiyuki

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 97 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004311411	A	20041104	JP 2004-49238	20040225
PRIORITY APPLN. INFO.:			JP 2003-84072	A 20030326
OTHER SOURCE(S):			MARPAT 141:403269	

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

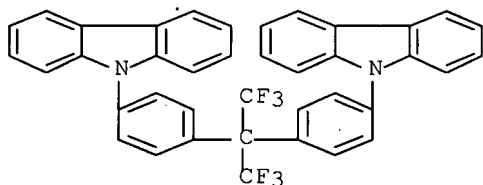
AB The invention relates to an organic **electroluminescent device**, suited for use in making an **illumination apparatus** and an optical **display**, comprising an **electroluminescent** layer containing a phosphorescent compound and the compound represented by I [R1-3 = alkyl, and cycloalkyl groups; n1 = 0-5 integer; n2 and n3 = 0-4 integer] and an organic layer containing a hole transporting compound represented by II [R11-14 = H, alkyl and bonding group; R11-14 = alkyl, aromatic, heterocyclic, etc.; m11, m12, m13, and m14 = 0-4 integer; L1 = III, IV, and -Ar1-L'-Ar2-, etc. [R15 = alkyl, alkoxy, alkylthio, etc.; R15 = alkyl, aromatic, heterocyclic, etc.; m15 = 0-3 integer; Ar1 and Ar2 = arylene group; L' = alkylene and phenylene]].

IT 697312-14-4

RL: DEV (Device component use); USES (Uses)  
(host material in **electroluminescent** layer; organic **electroluminescent device** for **illumination apparatus** and optical **display**)

RN 697312-14-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]d  
i-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 27, 74

ST org **electroluminescent device** phosphorescence

host material hole transporting

IT **Electroluminescent devices**

(displays; organic **electroluminescent**)

device for illumination apparatus and  
optical display)

IT Luminescent screens  
(electroluminescent; organic  
electroluminescent device for  
illumination apparatus and optical display  
)

IT Electroluminescent devices  
Light sources  
Phosphorescent substances  
(organic electroluminescent device for  
illumination apparatus and optical display  
)

IT 58473-78-2 405171-87-1  
RL: DEV (Device component use); USES (Uses)  
(hole transporting material; organic electroluminescent  
device for illumination apparatus and  
optical display)

IT 697312-14-4 697312-27-9 697312-28-0  
697312-29-1 697312-30-4 697312-31-5  
697312-32-6 697312-33-7 697312-34-8  
697312-35-9 697312-36-0  
RL: DEV (Device component use); USES (Uses)  
(host material in electroluminescent layer; organic  
electroluminescent device for  
illumination apparatus and optical display  
)

IT 697312-26-8P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(host material in electroluminescent layer; organic  
electroluminescent device for  
illumination apparatus and optical display  
)

IT 1095-78-9 5599-50-8 13029-09-9 786726-79-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic electroluminescent device for  
illumination apparatus and optical display  
)

L31 ANSWER 28 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:935418 HCAPLUS Full-text

DOCUMENT NUMBER: 141:417625

TITLE: Organic electroluminescent  
device for display and  
illumination apparatus

INVENTOR(S): Kita, Hiroshi; Suzurizato, Yoshiyuki

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004311405	A	20041104	JP 2004-30359	200402

06

PRIORITY APPLN. INFO.:

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JP 2003-87519

A

200303

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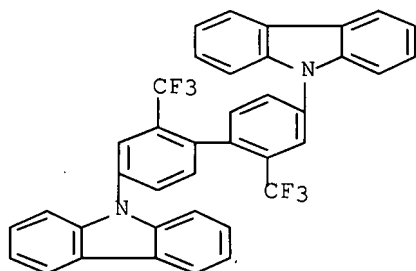
AB The invention relates to an organic **electroluminescent device**, suited for use in making an optical **display** and an **illumination apparatus**, comprising an **electroluminescent** layer containing a rhodium complex as a dopant, wherein the phosphorescence 0-0 band of the host material in the **electroluminescent** layer is  $\leq$  450 nm for ensuring the T-T energy transfer to the dopant.

IT 733038-91-0

RL: DEV (Device component use); USES (Uses)  
(host material; organic **electroluminescent device**  
for **display** and **illumination apparatus**)

RN 733038-91-0 HCAPLUS

CN 9H-Carbazole, 9,9'-[2,2'-bis(trifluoromethyl)[1,1'-biphenyl]-4,4'-diyl]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)

Section cross-reference(s): 74

ST org **electroluminescent device** phosphorescence  
rhodium complex

IT **Electroluminescent devices**

(displays; organic **electroluminescent**  
**device** for **display** and **illumination**  
**apparatus**)

IT **Luminescent screens**

(**electroluminescent**; organic  
**electroluminescent device** for **display**  
and **illumination apparatus**)

IT **Electroluminescent devices**

Light sources

Phosphorescent substances

(organic **electroluminescent device** for  
**display** and **illumination apparatus**)

IT Coordination compounds

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** for  
**display** and **illumination apparatus**)

IT 492446-97-6 592551-54-7 604785-54-8 607731-61-3 663219-32-7  
669072-95-1 733038-91-0 754231-95-3 754232-01-4  
787617-78-1 787617-79-2 787617-80-5 787617-81-6



RL: DEV (Device component use); USES (Uses)  
 (host material; organic **electroluminescent device**  
 for **display** and **illumination apparatus**)

IT 153838-49-4 439801-48-6 791110-44-6 791110-46-8 791110-47-9  
 791110-48-0 791110-49-1 791110-50-4 791110-51-5 791110-52-6  
 791110-53-7 791110-54-8 791110-55-9

RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)

(phosphorescent dopant; organic **electroluminescent**  
**device** for **display** and **illumination**  
**apparatus**)

L31 ANSWER 29 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:934664 HCAPLUS Full-text

DOCUMENT NUMBER: 141:403601

TITLE: Organic **electroluminescent**  
**device** and **display** showing

high luminous efficiency and long life

INVENTOR(S): Suzuri, Yoshiyuki; Kita, Hiroshi; Kato, Eisaku;  
 Oshiyama, Tomohiro; Fukuda, Mitsuhiro; Ueda,  
 Noriko

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: PCT Int. Appl., 156 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004095889	A1	20041104	WO 2004-JP5603	20040420

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
 KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
 MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,  
 SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
 VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE,  
 DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT,  
 RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
 ML, MR, NE, SN, TD, TG

CN 1701642	A	20051123	CN 2004-80000921	20040420
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EP 1617711	A1	20060118	EP 2004-728453	20040420
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
 PL, SK, HR

US 2005249970	A1	20051110	US 2004-519107
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PRIORITY APPLN. INFO.:

JP 2003-117886

A

200304

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JP 2004-15487

A

200401

23

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WO 2004-JP5603

W

200404

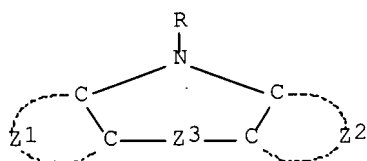
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OTHER SOURCE(S):

MARPAT 141:403601

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AB The title organic **electroluminescent device** is characterized by comprising composition layers between a pair of electrodes which composition layers include at least a phosphorescent **light-emitting** layer and at least one layer of which composition layers contains a compound represented by the following general formula I [Z1 = (substituted) aromatic heterocyclic ring; Z2 = (substituted) aromatic heterocyclic ring, (substituted) aromatic hydrocarbon ring; Z3 = divalent linking group, single bond; R = H, substituent].

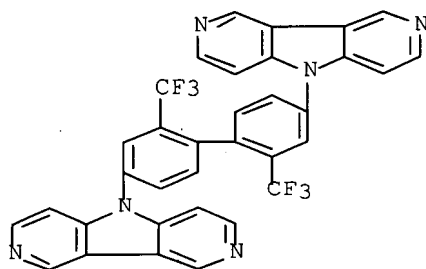
IT 787577-32-6

RL: DEV (Device component use); USES (Uses)

(compound in organic **electroluminescent device** and  
**display** showing high luminous efficiency and long life)

RN 787577-32-6 HCAPLUS

CN 5H-Pyrrolo[3,2-c:4,5-c']dipyridine, 5,5'-[2,2'-  
 bis(trifluoromethyl)[1,1'-biphenyl]-4,4'-diyl]bis- (9CI) (CA INDEX  
 NAME)



IC ICM H05B033-22  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 73  
 ST org **electroluminescent device display**  
**electroluminescence** material  
 IT **Electroluminescent devices**  
 (displays; organic **electroluminescent**  
**device** and **display** showing high luminous  
 efficiency and long life)  
 IT **Luminescent screens**  
**Luminescent** substances  
 (electroluminescent; organic  
**electroluminescent device** and **display**  
 showing high luminous efficiency and long life)  
 IT 151937-22-3 343780-34-7 787577-28-0 787577-30-4  
**787577-32-6** 787577-34-8 787577-37-1 787577-40-6  
 787577-43-9 787577-45-1 787577-47-3 787577-49-5 787577-51-9  
 787577-53-1 787577-56-4 **787577-59-7 787577-61-1**  
 787577-64-4 **787577-66-6** 787577-72-4 787577-74-6  
 787577-83-7 787577-86-0 787577-88-2 787577-90-6 787577-93-9  
 787577-95-1 787577-98-4 787578-01-2 787578-04-5 787578-07-8  
 787578-09-0 787578-11-4 787578-13-6 787578-15-8 787578-17-0  
 787578-25-0 787578-27-2 787578-29-4 787578-31-8 787578-33-0  
 787578-37-4  
 RL: DEV (Device component use); USES (Uses)  
 (compound in organic **electroluminescent device** and  
**display** showing high luminous efficiency and long life)  
 IT 787577-77-9P 787577-80-4P **787578-23-8P**  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (compound in organic **electroluminescent device** and  
**display** showing high luminous efficiency and long life)  
 IT 244-63-3,  $\beta$ -Carboline 244-69-9,  $\gamma$ -Carboline 245-08-9,  
 $\delta$ -Carboline **1095-78-9** 3001-15-8,  
 4,4'-Diiodobiphenyl 13029-08-8 787578-41-0 787578-44-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (compound preparation; compound in organic **electroluminescent**  
**device** and **display** showing high luminous  
 efficiency and long life)  
 IT 787577-68-8P **787578-19-2P** 787578-21-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (compound preparation; compound in organic **electroluminescent**  
**device** and **display** showing high luminous  
 efficiency and long life)  
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN  
 THE RE FORMAT

L31 ANSWER 30 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:932026 HCAPLUS Full-text

DOCUMENT NUMBER: 141:403589

TITLE: Organic **electroluminescent (EL**  
**)** element with high luminance and excellent  
 quantum efficiency and its **illumination**  
 and **display device**

INVENTOR(S): Fukuda, Mitsuhiro; Suzurizato, Yoshiyuki; Kita,  
 Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004311415	A	20041104	JP 2004-49242	20040225

PRIORITY APPLN. INFO.: JP 2003-79516 A 20030324

OTHER SOURCE(S): MARPAT 141:403589

AB The organic EL element involves a layer containing substituted carbazole compds., wherein the layer contain <0.5% compds. bearing amino groups in the moiety bonded to carbazole rings as impurities. The **light emitted** from the organic EL element on application of elec. field will contain phosphorescent light or white light.

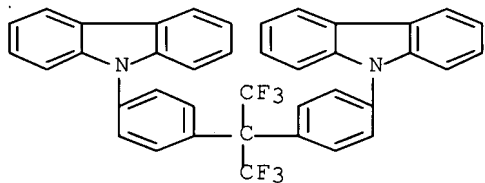
IT 697312-14-4P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

RN 697312-14-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73

ST org **electroluminescent** element **illumination display**; carbazole deriv org **electroluminescent** element

IT **Electroluminescent devices**  
**illumination**

(carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

IT **Electroluminescent devices**

(displays; carbazole derivative-containing organic **EL** element with high luminance and excellent quantum efficiency and its illumination and display device  
)

IT Luminescent screens

(electroluminescent; carbazole derivative-containing organic **EL** element with high luminance and excellent quantum efficiency and its illumination and display device)

IT Phosphors

(white-emitting; carbazole derivative-containing organic **EL** element with high luminance and excellent quantum efficiency and its illumination and display device  
)

IT 787638-71-5P

RL: BYP (Byproduct); OCU (Occurrence, unclassified); OCCU (Occurrence); PREP (Preparation)

(carbazole derivative-containing organic **EL** element with high luminance and excellent quantum efficiency and its illumination and display device)

IT 58328-31-7P 697312-14-4P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(carbazole derivative-containing organic **EL** element with high luminance and excellent quantum efficiency and its illumination and display device)

IT 2085-33-8, Alq3 4733-39-5 94928-86-6 123847-85-8 139092-78-7  
148044-07-9 344796-22-1 376367-93-0 604785-54-8 769954-75-8  
787638-69-1 787638-70-4

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(carbazole derivative-containing organic **EL** element with high luminance and excellent quantum efficiency and its illumination and display device)

IT 92-87-5, 4,4'-Diaminobiphenyl

RL: OCU (Occurrence, unclassified); RCT (Reactant); OCCU (Occurrence); RACT (Reactant or reagent)

(carbazole derivative-containing organic **EL** element with high luminance and excellent quantum efficiency and its illumination and display device)

IT 92-86-4, 4,4'-Dibromobiphenyl 1095-78-9,  
2,2-Bis(4-aminophenyl)hexafluoropropane

RL: RCT (Reactant); RACT (Reactant or reagent)

(carbazole derivative-containing organic **EL** element with high luminance and excellent quantum efficiency and its illumination and display device)

L31 ANSWER 31 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:932025 HCAPLUS Full-text

DOCUMENT NUMBER: 141:403588

TITLE: Organic electroluminescent (**EL**  
) element with high luminance and excellent quantum efficiency and illumination and display device assembled with the same

INVENTOR(S): Fukuda, Mitsuhiro; Ueda, Noriko; Yamada, Taketoshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

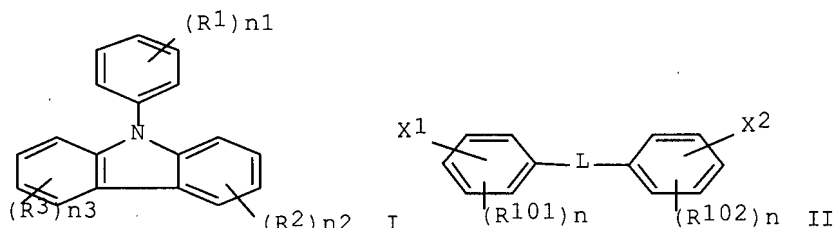
SOURCE: Jpn. Kokai Tokkyo Koho, 90 pp.

DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004311413	A	20041104	JP 2004-49240	20040225

PRIORITY APPLN. INFO.: JP 2003-84074 A 20030326

OTHER SOURCE(S): MARPAT 141:403588  
 GI



AB The organic **EL** element contains organic layers containing at least **light-emitting** layers, wherein the **light-emitting** layers contain 9-phenylcarbazole derivs. I (R1-R3 = alkyl, cycloalkyl; n1 = 0-5 integer; n2, n3 = 0-4 integer) and phosphorescent compds. and  $\geq 1$  of the organic layers contain aromatic compds. II (X1, X2 = heterocyclic ring containing  $\geq 2$  N; L = bond,  $\geq 1$  of divalent groups selected from substd methylene, substd phenylene; R101, R102 = substituent; n, m = 0-4 integer), aryl group-containing 1,2,4-triazole derivs., aryl group-containing pyrimidine derivs., aryl group-containing 1,3,5-triazine derivs., aryl group-containing 1,3,4-thiadiazole derivs., aryl group-containing 1,3,4-oxadiazole derivs., and aryl group-containing imidazole derivs.

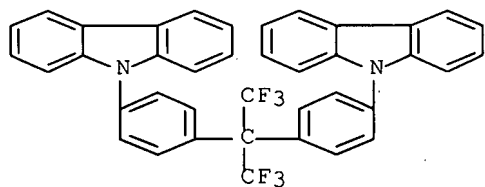
IT 697312-14-4P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(host; organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)

RN 697312-14-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[2,2,2-trifluoro-1-(trifluoromethyl)ethyldiene]d i-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



- IC ICM H05B033-14  
ICS C09K011-06; H05B033-22
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73
- ST org **electroluminescent device**  
**illumination** phenylcarbazole deriv; phenylcarbazole deriv  
org **electroluminescent display**
- IT **Electroluminescent devices**  
(**displays**; organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)
- IT **Luminescent screens**  
(**electroluminescent**; organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)
- IT **Electroluminescent devices**  
**Illumination**  
(organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)
- IT 94928-86-6  
RL: MOA (Modifier or additive use); USES (Uses)  
(dopant; organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)
- IT 4733-39-5 14117-13-6 787640-66-8  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electron-transporting layer; organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)
- IT **697312-14-4P** 697312-26-8P  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(host; organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)
- IT 58328-31-7 419536-32-6 **697312-27-9** **697312-28-0**  
**697312-29-1** **697312-30-4** 697312-31-5  
**697312-32-6** **697312-33-7**  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(host; organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)
- IT 2085-33-8, Alq3 123847-85-8  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)
- IT **1095-78-9** 5599-50-8 13029-09-9 786726-79-2

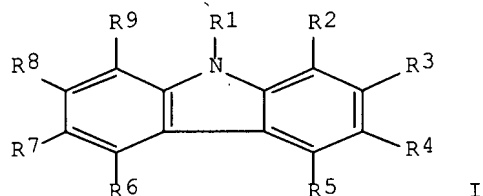
RL: RCT (Reactant); RACT (Reactant or reagent)  
 (organic **EL** element with high luminance and excellent  
 quantum efficiency for lighting and **display**)

L31 ANSWER 32 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:842712 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:340072  
 TITLE: White-emitting organic  
**electroluminescent device** with  
 high emission efficiency and long service life  
 and its **display** and  
**illumination**  
 INVENTOR(S): Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 46 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004288381	A	20041014	JP 2003-75512	20030319

PRIORITY APPLN. INFO.: <-- JP 2003-75512 20030319

OTHER SOURCE(S): MARPAT 141:340072  
 GI



AB The organic **EL device** contains carbazol derivs. represented by the general formula I (R1 = H, substituent, F-containing aryl; when R1 = H or substituent, ≥1 of R2-R9 = F or F-containing aryl and other R2-R9 = H or substituent; when R1 = F-containing aryl, R2-R9 = H or substituent). The organic **EL device** will contain I and phosphorescent dopants in the **light-emitting layer**.

IT 773150-33-7

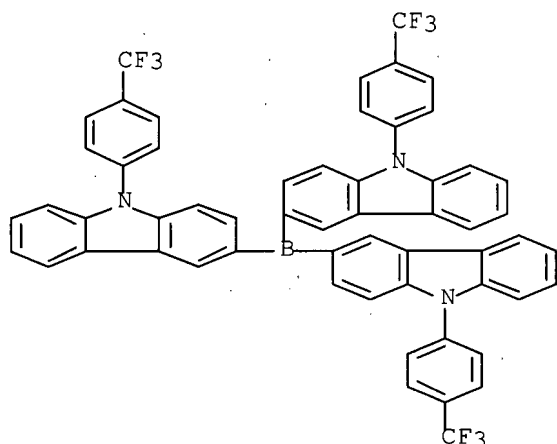
RL: DEV (Device component use); USES (Uses)  
 (white-emitting organic **EL device** containing  
 carbazol derivs. as hosts for phosphorescent dopants for  
**display** and **illumination**)

RN 773150-33-7 HCAPLUS

CN 9H-Carbazole, 3,3',3''-borylidynetris[9-[4-(trifluoromethyl)phenyl]-



(9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06

CC 73-3 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 74

ST carbazol deriv host org **electroluminescent device**  
; phosphorescent dopant org **electroluminescent device**; org **electroluminescent display**  
carbazol deriv host; illumination org **electroluminescent device** carbazol deriv

IT **Electroluminescent devices**  
(displays; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT Luminescent **screens**  
(**electroluminescent**; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT Light  
(white, fluorescent; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT **Electroluminescent devices**  
Phosphors  
(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT 2085-33-8, Alq3 4733-39-5 58328-31-7 94928-86-6 123847-85-8  
343978-79-0 376367-93-0 405171-87-1 773150-28-0 773150-29-1  
773150-30-4 773150-31-5 773150-32-6 **773150-33-7**  
773150-34-8 773150-35-9 773150-36-0 773150-37-1 773150-38-2  
773150-39-3 773150-40-6 **773150-41-7** 773150-42-8  
773150-43-9

RL: DEV (Device component use); USES (Uses)  
(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for

## display and illumination)

L31 ANSWER 33 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:842711 HCAPLUS Full-text

DOCUMENT NUMBER: 141:340137

TITLE: White-emitting organic  
**electroluminescent device** with  
 high emission efficiency and long service life  
 and its **display** and  
**illumination**

INVENTOR(S): Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004288380	A	20041014	JP 2003-75511	200303 19

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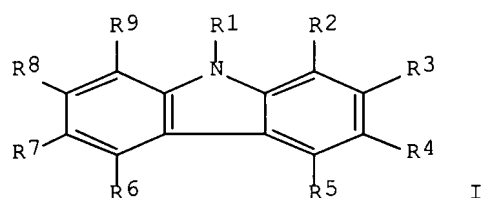
PRIORITY APPLN. INFO.: JP 2003-75511

200303  
19

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OTHER SOURCE(S): MARPAT 141:340137

GI



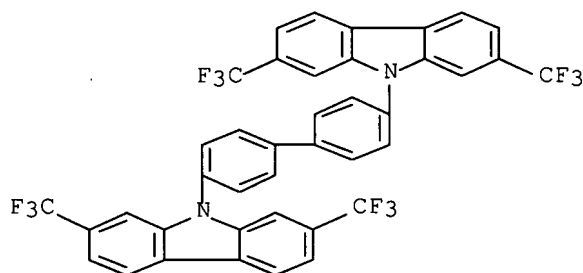
AB The organic **EL device** contains carbazol derivs. represented by the general formula I (R1 = H, substituent, F-containing alkyl; when R1 = H or substituent, ≥1 of R2-R9 = F or F-containing alkyl and other R2-R9 = H or substituent; when R1 = F-containing alkyl, R2-R9 = H or substituent). The organic **EL device** will contain I and phosphorescent dopants in the **light-emitting** layer.

IT 773156-59-5

RL: DEV (Device component use); USES (Uses)  
 (white-emitting organic **EL device** containing  
 carbazol derivs. as hosts for phosphorescent dopants for  
**display** and **illumination**)

RN 773156-59-5 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis[2,7-  
 bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 74

ST carbazol deriv host org **electroluminescent device**  
; phosphorescent dopant org **electroluminescent device**; org **electroluminescent display**  
carbazol deriv host; illumination org **electroluminescent device** carbazol deriv

IT **Electroluminescent devices**  
(**displays**; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT Luminescent **screens**  
(**electroluminescent**; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT Light  
(white, fluorescent; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT **Electroluminescent devices**  
Phosphors  
(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT 2085-33-8, Alq3 4733-39-5 58328-31-7 94928-86-6 123847-85-8  
344796-22-1 376367-93-0 405171-87-1 602331-44-2 773156-50-6  
773156-51-7 773156-52-8 773156-53-9 773156-54-0 773156-55-1  
773156-56-2 773156-57-3 773156-58-4 **773156-59-5**  
**773156-60-8** 773156-61-9 773156-62-0 773156-63-1  
773156-64-2  
RL: DEV (Device component use); USES (Uses)  
(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

L31 ANSWER 34 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2004:739385 HCAPLUS Full-text  
DOCUMENT NUMBER: 141:268179  
TITLE: Long-life white-emitting organic **electroluminescent devices**,

displays, illumination  
apparatus, and electric appliances  
therewith

INVENTOR(S): Fukuda, Mitsuhiro; Genda, Kazuo  
PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 577 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent  
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004253298	A	20040909	JP 2003-43860	200302 21

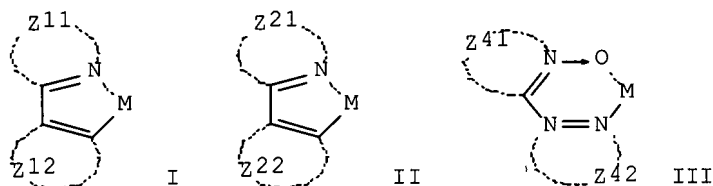
PRIORITY APPLN. INFO.:

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JP 2003-43860

200302  
21

OTHER SOURCE(S): MARPAT 141:268179  
GI

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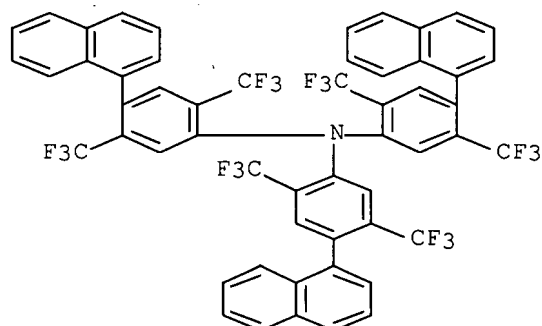
AB The devices have, in their constituent layers (e.g., emitting layers, hole- or electron-transporting layers), (i) compds. represented by  $X_1R_1C:CR_2X_2$  [ $X_1, X_2$  = aryl, heterocycle;  $R_1, R_2$  = aryl, heterocyclic hydrocarbyl, cycloalkoxy ( $R_1 = R_2$  = aryl)],  $R_{11}R_{12}R_{13}R_{14}R_{15}P$  ( $R_{11}-R_{15}$  = monovalent substituent),  $Ar_2Ar_1C_6H_4(m-Ar_1Ar_2)$  [ $Ar_1$  = bivalent aromatic hydrocarbylene;  $Ar_2$  = (substituted) Ph; H atom on the benzene ring may be substituted with (cyclo)alkyl, alkoxy, or halo],  $Z(ArQ)_n$  [ $Q$  = (substituted) o-(2-pyridyl)phenyl;  $Z$  = n-valent bridging group, single bond;  $Ar$  = bivalent arylene;  $n = 2-8$ ], etc., (ii) fluorescent compds. with mol. weight 500-2000 and atomic ratio  $F/(F + H)$  0-0.9 and having fluorescent peak at  $\leq 415$  nm, (iii) polysilanes  $(R_{21}R_{22}Si)_n$  [ $R_{21}, R_{22}$  = alkyl(oxy), aromatic group, aryloxy;  $n_1 \geq 3$ ] or  $[R_{31}(Ar_{31}NR_{32}R_{33})Si]_n$  [ $R_{31}$  = alkyl(oxy), aromatic group, aryloxy;  $R_{32}, R_{33}$  = alkyl, aromatic group;  $Ar_{31}$  = arylene;  $n_2 \geq 3$ ], and/or (iv) fluorescent compds. satisfying atomic ratio  $N/C$  0-0.05. The devices, having phosphorescent dopants I ( $Z_{11}$  = aromatic azacycle;  $Z_{12}$  = nonarom. ring, 5-membered aromatic ring, azulene;  $M$  = metal), II ( $Z_{21}, Z_{22}$  = aromatic azacycle;  $M$  = metal), or III ( $Z_{41}$  = azacycle;  $Z_{42}$  = ring;  $M$  = metal) in emitting layers, are also claimed. The devices exhibit high luminescent efficiency and substantially white emission, and are suited for light source uses, especially of LCD.

IT 655240-48-5

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organic LED containing azacyclic  
phosphorescent dopants and showing high luminescent efficiency)

RN 655240-48-5 HCAPLUS  
 CN Benzenamine, 4-(1-naphthalenyl)-N,N-bis[4-(1-naphthalenyl)-2,5-bis(trifluoromethyl)phenyl]-2,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06; G02F001-1335; H05B033-22  
 CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 28, 29, 38, 74  
 ST white emitting **electroluminescent** life luminescent efficiency; phosphorescent azacyclic dopant **luminescent** efficiency **org** LED; LCD **light** source white **emitting** electrophosphorescent  
 IT Luminescent substances  
 (electroluminescent, electrophosphorescent, host-guest; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)  
 IT Liquid crystal **displays**  
 (light sources for; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)  
 IT **Electroluminescent devices**  
 (white-emitting, electrophosphorescent; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)  
 IT 71-43-2, Benzene, uses 159-68-2, 9,9'-Spirobi[9H-9-silafluorene]  
 346-02-1 752-28-3 1423-70-7 17742-49-3 18822-13-4  
 20156-53-0 32314-41-3 33861-11-9 35088-77-8 38186-32-2  
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722547-89-9	754231-79-3	754231-80-6	754231-82-8	754231-83-9
754231-84-0	754231-87-3	754231-88-4	754231-89-5	754231-90-8
754231-91-9	754231-92-0	754231-94-2		

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

L31 ANSWER 35 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:632515 HCAPLUS Full-text

DOCUMENT NUMBER: 141:182064

TITLE: Organic **electroluminescent device** showing stable operation for **flat panel display**

INVENTOR(S): Yoneyama, Tomio; Sato, Itsuki; Sato, Hideki

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 38 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004220931	A	20040805	JP 2003-7300	20030115

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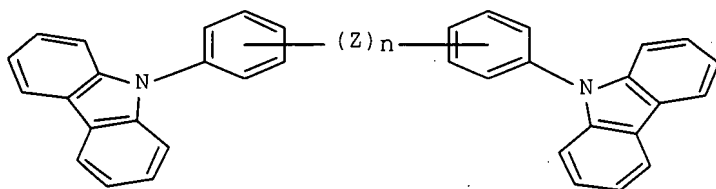
PRIORITY APPLN. INFO.: JP 2003-7300

20030115

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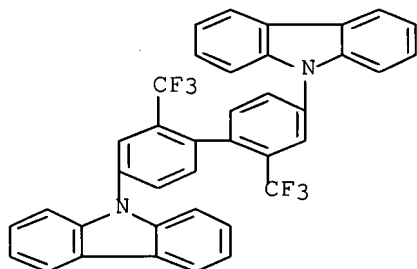
OTHER SOURCE(S): MARPAT 141:182064

GI



I

- AB The title **electroluminescent device** includes a compound represented by I (Z = divalent connection group; n = 0-5) in a pos. hole blocking layer. The compds. were synthesized in the examples.
- IT **733038-91-0P**  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation of pos. hole blocking material for organic **electroluminescent device** showing stable operation for **flat panel display**)
- RN 733038-91-0 HCAPLUS
- CN 9H-Carbazole, 9,9'-[2,2'-bis(trifluoromethyl)[1,1'-biphenyl]-4,4'-diyl]bis- (9CI) (CA INDEX NAME)



- IC ICM H05B033-22  
 ICS C07D403-10; C07D403-12; C07D413-10; C09K011-06; H05B033-14
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73
- ST org **electroluminescent device display**  
 pos hole blocking material
- IT **Electroluminescent devices**  
 (displays; organic **electroluminescent device** showing stable operation for **flat panel display**)
- IT **Luminescent screens**  
 (electroluminescent; organic **electroluminescent device** showing stable operation for **flat panel display**)
- IT 733038-87-4P 733038-89-6P **733038-91-0P**  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation of pos. hole blocking material for organic **electroluminescent device** showing stable operation for **flat panel display**)

IT 80-08-0, Bis(4-aminophenyl)sulfone 86-74-8, Carbazole  
**341-58-2**, 4,4'-Diamino-2,2'-bis(trifluoromethyl)biphenyl  
 2425-95-8, 2,5-Bis(4-aminophenyl)-1,3,4-oxadiazole 7681-11-0,  
 Potassium iodide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of pos. hole blocking material for organic  
**electroluminescent device** showing stable  
 operation for **flat panel display**)

IT 100541-43-3P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation of pos. hole blocking material for organic  
**electroluminescent device** showing stable  
 operation for **flat panel display**)

L31 ANSWER 36 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:512741 HCAPLUS Full-text

DOCUMENT NUMBER: 141:79110

TITLE: Organic **electroluminescent**  
**devices/displays**

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2004178896	A	20040624	JP 2002-342194	200211 26

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PRIORITY APPLN. INFO.: JP 2002-342194

200211  
26

<--

OTHER SOURCE(S): MARPAT 141:79110

AB The **devices/displays** comprise, in organic layers, triarylamines NAr<sub>1</sub>Ar<sub>2</sub>Ar<sub>3</sub> (Ar<sub>1</sub>-3 = substituted ph or 4-biphenyl having carbazoyl substituent) as hosts, and phosphorescent substances capable of emitting from the triplet-state exciton as dopants. Preferably, the dopants are complexes of Group VIIIB metals. The **devices/displays** show high luminance, quantum efficiency, and long half-life.

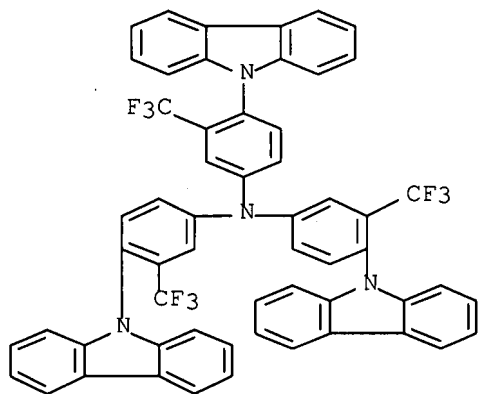
IT **710306-24-4**

RL: TEM (Technical or engineered material use); USES (Uses)  
 (host; organic **electroluminescent device**/  
**displays** containing triaryllamine hosts and phosphorescent  
 dopants)

RN 710306-24-4 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-3-(trifluoromethyl)phenyl]-3-(trifluoromethyl)- (9CI) (CA INDEX NAME)





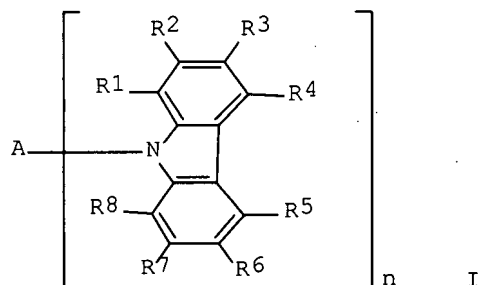
- IC ICM H05B033-14  
ICS C09K011-06; H05B033-12
- CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74
- ST org **electroluminescent device** triarylamine host  
phosphorescent dopant; **display** org  
**electroluminescent** triarylamine host phosphorescent dopant;  
Group IIIB metal complex dopant org **electroluminescent device**
- IT **Electroluminescent devices**  
(**displays**, organic; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)
- IT **Luminescent screens**  
(**electroluminescent**, organic; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)
- IT **Luminescent substances**  
(**electroluminescent**; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)
- IT **Electroluminescent devices**  
(organic; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)
- IT 655240-58-7 710306-22-2 **710306-24-4** 710306-25-5  
710306-26-6 710306-27-7 710306-28-8 710306-29-9 710306-30-2  
710306-31-3 710306-33-5 710306-34-6 710306-35-7 710306-36-8  
710306-37-9 710320-40-4  
RL: TEM (Technical or engineered material use); USES (Uses)  
(host; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)
- IT 94928-86-6 344796-22-1 376367-93-0  
RL: TEM (Technical or engineered material use); USES (Uses)  
(phosphorescent dopant; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)

TITLE: Organic **electroluminescent device and display**  
 INVENTOR(S): Fukuda, Mitsuhiro; Yamada, Taketoshi; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 35 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004171808	A	20040617	JP 2002-333320	20021118

PRIORITY APPLN. INFO.: <-- JP 2002-333320 20021118

OTHER SOURCE(S): MARPAT 141:61823  
 GI

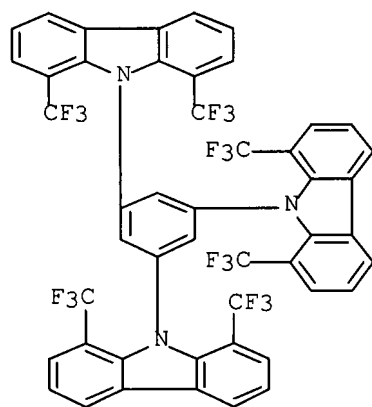


AB The invention relates to an organic **electroluminescent device and display**, especially a phosphorescent **electroluminescence device**, comprising the carbazole derivative represented by I [A = aromatic ring residue; R1-8 = H and substituted group (at least one of R1-8 is a substituted group other than H); n = ≥1 integer].

IT 705280-88-2  
 RL: DEV (Device component use); USES (Uses)  
 (phosphorescent organic **electroluminescent device and display**)

RN 705280-88-2 HCAPLUS

CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[1,8-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)]



IC ICM H05B033-14  
ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 74

ST carbazole deriv phosphorescence org electroluminescent  
device display

IT Electroluminescent devices  
(displays; phosphorescent organic  
electroluminescent device and display  
)

IT Luminescent screens  
(electroluminescent; phosphorescent organic  
electroluminescent device and display  
)

IT Electroluminescent devices  
(phosphorescent organic electroluminescent device  
and display)

IT 86-74-8D, Carbazole, derivs. 705280-84-8 705280-85-9  
705280-86-0 705280-87-1 **705280-88-2** 705280-89-3  
705280-90-6 705280-91-7 705280-92-8 705280-93-9 705280-94-0  
705280-95-1 705280-96-2 705280-97-3 705280-98-4 705280-99-5  
705281-00-1 705281-01-2  
RL: DEV (Device component use); USES (Uses)  
(phosphorescent organic electroluminescent device  
and display)

IT 705280-81-5P 705280-83-7P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(phosphorescent organic electroluminescent device  
and display)

IT 108-77-0, 1,3,5-Trichlorotriazine 626-39-1, 1,3,5-Tribromobenzene  
5599-50-8, 3,6-Dimethylcarbazole 6825-20-3, 3,6-Dibromocarbazole  
13922-41-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(phosphorescent organic electroluminescent device  
and display)

IT 705280-82-6P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)  
(phosphorescent organic electroluminescent device  
and display)

L31 ANSWER 38 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:473163 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:30891  
 TITLE: Organic **electroluminescent device and display**  
 INVENTOR(S): Fukuda, Mitsuhiro; Kita, Hiroshi; Yamada, Taketoshi  
 PATENT ASSIGNEE(S): Japan  
 SOURCE: U.S. Pat. Appl. Publ., 37 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ---	DATE -----	APPLICATION NO. -----	DATE
US 2004110031	A1	20040610	US 2003-718360	200311 20
			<--	
JP 2004178895	A	20040624	JP 2002-342192	200211 26
			<--	
PRIORITY APPLN. INFO.:			JP 2002-342192	A 200211 26
			<--	

OTHER SOURCE(S): MARPAT 141:30891

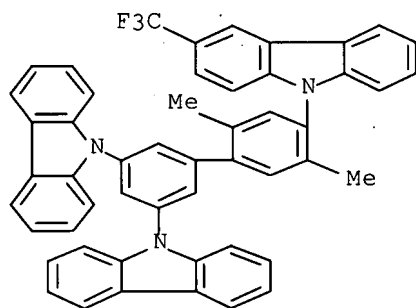
AB Disclosed is an organic **electroluminescent device** comprising a component layer including a **light emission** layer, wherein the **light emission** layer contains a phosphorescent compound, and the component layer contains a compound represented by A-(Z)n, [A = (un)substituted aromatic ring residue; n = 3-6 integer; and Z = monovalent organic group represented by -L-Cz, [L = chemical pond and divalent linking group; Cz = (un)substituted carbazole residue], provided that A-(Z)n does not have an n-fold axis of symmetry].

IT **699119-86-3P**

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (organic **electroluminescent device** and **display** having **light emitting** layer containing phosphorescent substance)

RN 699119-86-3 HCAPLUS

CN 9H-Carbazole, 9-(3',5'-di-9H-carbazol-9-yl-2,5-dimethyl[1,1'-biphenyl]-4-yl)-3-(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 INCL 428690000; 428917000; 313504000; 313506000; 257102000; 257103000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
 Related Properties)  
 Section cross-reference(s): 74  
 ST org **electroluminescent device display**  
 phosphorescent substance  
 IT **Electroluminescent devices**  
 (displays; organic **electroluminescent**  
**device** and **display** having **light**  
**emitting** layer containing phosphorescent substance)  
 IT **Luminescent screens**  
 (electroluminescent; organic  
**electroluminescent device** and **display**  
 having **light emitting** layer containing  
 phosphorescent substance)  
 IT **Electroluminescent devices**  
 Phosphorescent substances  
 (organic **electroluminescent device** and  
**display** having **light emitting** layer  
 containing phosphorescent substance)  
 IT 699119-91-0P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (lorg. **electroluminescent device** and  
**display** having **light emitting** layer  
 containing phosphorescent substance)  
 IT 94928-86-6 343978-79-0 376367-93-0  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)  
 (organic **electroluminescent device** and  
**display** having **light emitting** layer  
 containing phosphorescent substance)  
 IT 699119-36-3P 699119-40-9P 699119-44-3P 699119-49-8P  
 699119-54-5P 699119-58-9P 699119-61-4P 699119-65-8P  
 699119-69-2P 699119-73-8P 699119-77-2P 699119-81-8P  
**699119-86-3P 699119-96-5P 699120-00-8P**  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (organic **electroluminescent device** and  
**display** having **light emitting** layer  
 containing phosphorescent substance)  
 IT 86-74-8, 9H-Carbazole 98-80-6 626-39-1 2408-70-0 36847-11-7  
 202865-85-8 699119-05-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (organic **electroluminescent device** and

**display** having light emitting layer  
containing phosphorescent substance)

IT 6825-20-3P 56525-79-2P 699119-10-3P 699119-14-7P  
699119-23-8P 699119-26-1P 699119-32-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)

(organic electroluminescent device and  
**display** having light emitting layer  
containing phosphorescent substance)

L31 ANSWER 39 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:446941 HCAPLUS Full-text

DOCUMENT NUMBER: 141:30822

TITLE: Organic electroluminescent element,  
**display** and illuminator

INVENTOR(S): Oshiyama, Tomohiro; Kinoshita, Motoi; Yamada,  
Taketoshi; Kita, Hiroshi; Fukuda, Mitsuhiro;  
Suzuri, Yoshiyuki; Ueda, Noriko

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Eur. Pat. Appl., 162 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1424381	A2	20040602	EP 2003-26685	200311 20
<--				
EP 1424381	A3	20050119		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004335427	A	20041125	JP 2003-160609	200306 05
<--				
US 2004115476	A1	20040617	US 2003-718025	200311 20
<--				
JP 2004311410	A	20041104	JP 2004-49237	200402 25
<--				
JP 2004311412	A	20041104	JP 2004-49239	200402 25
<--				
JP 2004311414	A	20041104	JP 2004-49241	200402 25
<--				
PRIORITY APPLN. INFO.:			JP 2002-342193	A 200211 26

<--  
 JP 2003-61201 A 200303  
 07  
 <--  
 JP 2003-84071 A 200303  
 26  
 <--  
 JP 2003-84073 A 200303  
 26  
 <--  
 JP 2003-84075 A 200303  
 26  
 <--  
 JP 2003-160609 A 200306  
 05  
 <--

OTHER SOURCE(S): MARPAT 141:30822  
 GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

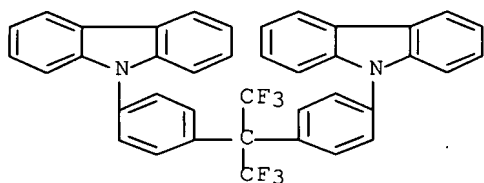
AB The invention refers to an organic **electroluminescent** element comprising a component layer between an anode and cathode containing a compound represented by  $X1-(A1)_n$  wherein  $A1 = I$  [Ar = divalent aromatic hydrocarbon or aromatic heterocyclic;  $R1,2 = H$ , (un)substituted alkyl, cycloalkyl, aralkyl, aryl, alkoxy, aryloxy, or alkenyl, cyano, hydroxyl or halo;  $n_a, n_b = 1 - 4$ ;  $X1 = II - XII$ ;  $R11-14, R21-24, R31-34 = H$ , (un)substituted alkyl, cycloalkyl, aralkyl, aryl, alkoxy, aryloxy, or alkenyl, cyano, hydroxyl or halo;  $R41,42, R61 = alkyl$ ;  $R51-52 =$  (un)substituted alkyl, cycloalkyl, aralkyl, aryl, alkoxy, aryloxy or alkenyl, cyano, hydroxyl or halo;  $Xa =$  divalent unsubstituted alkyl-substituted or 6- or 7-membered monocyclic heterocycle;  $R71-78, R81-88, R91-98 = H, alkyl$ , \* represents a linkage site].

IT 697312-14-4

RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent** element, **display** and **illuminator**)

RN 697312-14-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]d  
 i-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
ICS H05B033-14; H01L051-20  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)  
ST electroluminescent display carbazole deriv  
IT Electroluminescent devices  
(displays; organic electroluminescent element,  
display and illuminator)  
IT Luminescent screens  
(electroluminescent; organic  
electroluminescent element, display and  
illuminator)  
IT 419536-32-6 697311-97-0 697311-98-1 697311-99-2 697312-00-8  
697312-01-9 697312-02-0 697312-03-1 697312-04-2 697312-05-3  
697312-06-4 697312-07-5 697312-08-6 697312-09-7 697312-10-0  
697312-11-1 697312-12-2 697312-13-3 697312-14-4  
697312-15-5 697312-16-6 697312-17-7  
697312-18-8 697312-19-9 697312-20-2 697312-21-3 697312-22-4  
697312-23-5 697312-24-6 697312-25-7 697312-26-8  
697312-27-9 697312-28-0 697312-29-1  
697312-30-4 697312-31-5 697312-32-6  
697312-33-7 697312-34-8 697312-35-9 697312-36-0  
RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent element, display and  
illuminator)

L31 ANSWER 40 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:267211 HCAPLUS Full-text

DOCUMENT NUMBER: 140:311669

TITLE: Organic electroluminescent  
compositions

INVENTOR(S): Lamansky, Sergey A.; Baetzold, John P.;  
McCormick, Fred B.; Nirmal, Manoj; Roberts,  
Ralph R.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 31 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004062947	A1	20040401	US 2002-254237	200209 25
			<--	
WO 2004099338	A2	20041118	WO 2003-US29007	200309 15
			<--	
WO 2004099338	A3	20050106		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA,			



ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,  
 BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
 EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG

AU 2003304084 A1 20041126 AU 2003-304084

200309  
15

&lt;--

EP 1554360 A2 20050720 EP 2003-816923

200309  
15

&lt;--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
 SK

CN 1681903 A 20051012 CN 2003-822427

200309  
15

&lt;--

JP 2006510230 T 20060323 JP 2004-571703

200309  
15

&lt;--

PRIORITY APPLN. INFO.:

US 2002-254237 A

200209  
25

&lt;--

WO 2003-US29007 W

200309  
15

&lt;--

OTHER SOURCE(S): MARPAT 140:311669

AB Organic **electroluminescent** compns. are described which comprise a charge transport matrix comprising  $\geq 1$  electron transport material;  $\geq 1$  non-polymeric emissive dopant; and  $\geq 1$  tertiary aromatic amine. Preferably, the tertiary amine has a hole mobility greater than about  $10^{-5}$  cm<sup>2</sup>/V-s and an ionization potential of 4.8-5.4 eV. Organic **electroluminescent devices**, including **displays**, employing the materials are also described. Methods of making organic **electroluminescent devices** are described which entail selectively transferring the compns. of from a donor sheet to a receptor substrate; donor sheets suitable for the process are also described.

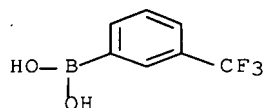
IT 1423-26-3, 3-Trifluoromethylphenyl boronic acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(organic **electroluminescent** compns. comprising electron transport materials and emitting dopants and tertiary aromatic amines and devices using them and their production using thermal transfer)

RN 1423-26-3 HCAPLUS

CN Boronic acid, B-[3-(trifluoromethyl)phenyl]- (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06

INCL 428690000; 428917000; 313504000; 252301160; 252301350

CC 73-5 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 74, 76

ST org **electroluminescent device** compn thermal  
transfer sheet

IT **Electroluminescent devices**  
(displays; organic **electroluminescent** compns.  
comprising electron transport materials and emitting dopants and  
tertiary aromatic amines and devices using them and their production  
using thermal transfer)

IT **Luminescent screens**  
**Luminescent** substances  
(**electroluminescent**; organic  
**electroluminescent** compns. comprising electron transport  
materials and emitting dopants and tertiary aromatic amines and  
devices using them and their production using thermal transfer)

IT Thermal-transfer printing  
(organic **electroluminescent** compns. comprising electron  
transport materials and emitting dopants and tertiary aromatic  
amines and devices using them and their production using thermal  
transfer)

IT **Electroluminescent devices**  
(organic; organic **electroluminescent** compns. comprising  
electron transport materials and emitting dopants and tertiary  
aromatic amines and devices using them and their production using  
thermal transfer)

IT Thermal-transfer printing materials  
(sheets; organic **electroluminescent** compns. comprising  
electron transport materials and emitting dopants and tertiary  
aromatic amines and devices using them and their production using  
thermal transfer)

IT 15082-28-7, 2-(4-Biphenyl)-5-(4-tert-butylphenyl)-1,3,4-oxadiazole.  
150405-69-9, 3-(4-Biphenyl)-4-phenyl-5-(4-tert-butylphenyl)-1,2,4-  
triazole  
RL: DEV (Device component use); USES (Uses)  
(electron transport material; organic **electroluminescent**  
compns. comprising electron transport materials and emitting  
dopants and tertiary aromatic amines and devices using them and  
their production using thermal transfer)

IT 676350-06-4P 676578-76-0P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(electron transport material; organic **electroluminescent**  
compns. comprising electron transport materials and emitting  
dopants and tertiary aromatic amines and devices using them and  
their production using thermal transfer)

IT 9003-53-6, Polystyrene 25067-59-8, Poly(9-vinylcarbazole)  
31248-39-2 58328-31-7, 4,4'-Bis(carbazol-9-yl)biphenyl  
105389-36-4 123847-85-8 124729-98-2 128396-99-6 185690-41-9  
RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent** compns. comprising electron  
transport materials and emitting dopants and tertiary aromatic  
amines and devices using them and their production using thermal  
transfer)

IT 905-62-4, 2,5-Bis-(1-naphthyl)-1,3,4-oxadiazole 38215-36-0,  
3-(2-Benzothiazolyl)-7-(diethylamino)coumarin 337526-85-9

337526-88-2

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(organic **electroluminescent** compns. comprising electron transport materials and emitting dopants and tertiary aromatic amines and devices using them and their production using thermal transfer)

IT 500295-45-4P

RL: DEV (Device component use); MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic **electroluminescent** compns. comprising electron transport materials and emitting dopants and tertiary aromatic amines and devices using them and their production using thermal transfer)

IT 676349-97-6P 676578-80-6P 676578-87-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic **electroluminescent** compns. comprising electron transport materials and emitting dopants and tertiary aromatic amines and devices using them and their production using thermal transfer)

IT 50-79-3, 2,5-Dichlorobenzoic acid 99-76-3, Methyl 4-hydroxybenzoate 109-04-6, 2-Bromopyridine 111-83-1, 1-Octylbromide 302-01-2, Hydrazine, reactions 610-71-9, 2,5-Dibromobenzoic acid 1423-26-3, 3-Trifluoromethylphenyl boronic acid 1779-49-3, Methyltriphenyl phosphonium bromide 4181-05-9, 4-(Diphenylamino)benzaldehyde 4422-95-1, 1,3,5-Benzenetricarbonyl trichloride 7719-09-7, Thionyl chloride 10025-83-9, Iridium trichloride 10025-87-3, Phosphorus oxychloride. 36809-26-4 59615-16-6, 2,4-Dibromobenzoyl chloride 61676-62-8, 2-Isopropoxy-4,4,5,5-tetramethyl-1,3,2-dioxaborolane 64327-92-0, 4-Octylbenzoylhydrazine 88374-55-4

RL: RCT (Reactant); RACT (Reactant or reagent)

(organic **electroluminescent** compns. comprising electron transport materials and emitting dopants and tertiary aromatic amines and devices using them and their production using thermal transfer)

IT 89-75-8P, 2,4-Dichlorobenzoyl Chloride 5957-84-6P, 2-(3-Trifluoromethylphenyl)pyridine 25069-74-3P 59615-13-3P, 2,5-Dibromobenzoyl Chloride 62435-37-4P 267221-89-6P 676349-81-8P 676349-82-9P 676349-85-2P 676349-86-3P 676578-86-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(organic **electroluminescent** compns. comprising electron transport materials and emitting dopants and tertiary aromatic amines and devices using them and their production using thermal transfer)

IT 50851-57-5

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(polyethylene dioxythiophene doped with; organic **electroluminescent** compns. comprising electron transport materials and emitting dopants and tertiary aromatic amines and devices using them and their production using thermal transfer)

IT 126213-51-2, Poly(3,4-ethylenedioxythiophene)

RL: DEV (Device component use); USES (Uses)

(polystyrene sulfonate-doped; organic **electroluminescent** compns. comprising electron transport materials and emitting dopants and tertiary aromatic amines and devices using them and

their production using thermal transfer)

L31 ANSWER 41 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:118662 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:172301  
 TITLE: Organic **electroluminescent** elements  
 with improved brightness and durability and  
 color **displays** using them  
 INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 57 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004047443	A	20040212	JP 2003-134267	20030513

PRIORITY APPLN. INFO.: <-- JP 2002-140103 A 20020515  
 <--

OTHER SOURCE(S): MARPAT 140:172301

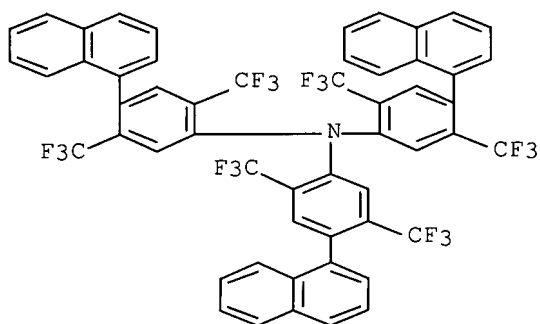
AB The elements contain , R1R2R3N [R1-3 = substituted p-A-Ph; A = (un)substituted aromatic hydrocarbyl], preferably in hole-transport layers. The elements may have **light-emitting** layers containing phosphorescent complexes of Group VIII metals (Os, Ir, or Pt, preferably) and  $\geq 1$  fluorescent compds. having maximum fluorescence wavelength longer than maximum emission wavelength of the complexes.

IT 655240-48-5

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (hole-transport layer; organic **EL** elements containing triphenylamine-based compds. with improved brightness and durability for **displays**)

RN 655240-48-5 HCAPLUS

CN Benzenamine, 4-(1-naphthalenyl)-N,N-bis[4-(1-naphthalenyl)-2,5-bis(trifluoromethyl)phenyl]-2,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 73

ST org **electroluminescent** element hole transporter  
tribiphenylamine; **EL display** iridium phosphor  
dopant durability; phenylamine host org **EL display**  
brightness

IT **Electroluminescent devices**  
(**displays**; organic **EL** elements containing  
triphenylamine-based compds. with improved brightness and  
durability for **displays**)

IT Group VIII element complexes  
RL: DEV (Device component use); MOA (Modifier or additive use); TEM  
(Technical or engineered material use); USES (Uses)  
(dopant, **light-emitting** layer; organic  
**EL** elements containing triphenylamine-based compds. with  
improved brightness and durability for **displays**)

IT **Luminescent screens**  
Phosphors  
(**electroluminescent**; organic **EL**  
elements containing triphenylamine-based compds. with improved  
brightness and durability for **displays**)

IT 31248-39-2 94928-86-6 337526-85-9 337526-98-4 343978-78-9  
343978-79-0 370878-74-3 376367-95-2 474948-19-1 500295-32-9  
562043-95-2  
RL: DEV (Device component use); MOA (Modifier or additive use); TEM  
(Technical or engineered material use); USES (Uses)  
(dopant, **light-emitting** layer; organic  
**EL** elements containing triphenylamine-based compds. with  
improved brightness and durability for **displays**)

IT 405171-49-5 **655240-48-5** 655240-49-6 655240-50-9  
655240-51-0 655240-52-1 655240-53-2 **655240-54-3**  
655240-55-4 655240-56-5 655240-57-6  
RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)  
(hole-transport layer; organic **EL** elements containing  
triphenylamine-based compds. with improved brightness and  
durability for **displays**)

IT 405171-87-1 655240-47-4  
RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)  
(hole-transport or **light-emitting** layer; organic  
**EL** elements containing triphenylamine-based compds. with  
improved brightness and durability for **displays**)

IT 58328-31-7 363607-70-9 405172-39-6 405173-85-5 655240-58-7  
655240-59-8 655240-60-1 **655240-61-2** 655240-62-3  
655240-63-4 655240-64-5 655240-65-6  
RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)  
(**light-emitting** layer; organic **EL**  
elements containing triphenylamine-based compds. with improved  
brightness and durability for **displays**)

L31 ANSWER 42 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2004:118661 HCAPLUS Full-text  
DOCUMENT NUMBER: 140:172300  
TITLE: Organic **electroluminescent** elements

with improved brightness and durability and **displays** using them

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Oshiyama, Tomohiro; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 43 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004047442	A	20040212	JP 2003-132872	20030512
			<--	
PRIORITY APPLN. INFO.:			JP 2002-138307	A 20020514
			<--	

OTHER SOURCE(S): MARPAT 140:172300

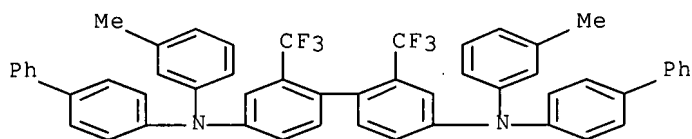
AB The elements contain R1R2NQ1Q2NR3R4 [R1-4 = (un)substituted Ph; Q1,2 = (un)substituted p-phenylene; Q1 = Q2 ≠ p-phenylene], preferably in hole-transport layers. The elements may have **light-emitting** layers containing phosphorescent complexes of Group VIII metals (Os, Ir, or Pt, preferably) and ≥1 fluorescent compds. having maximum fluorescence wavelength longer than maximum emission wavelength of the complexes.

IT 655236-08-1

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(hole-transport layer; organic **EL** elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)

RN 655236-08-1 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis([1,1'-biphenyl]-4-yl)-N,N'-bis(3-methylphenyl)-2,2'-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST org **electroluminescent** element hole transporter  
tetraphenylbenzidine; **EL display** iridium  
phosphor dopant durability; phenylbenzidine host org **EL display** brightness

- IT **Electroluminescent devices**  
(**displays**; organic EL elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)
- IT Group VIII element complexes  
RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(dopant, **light-emitting** layer; organic EL elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)
- IT **Luminescent screens**  
Phosphors  
(**electroluminescent**; organic EL elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)
- IT 31248-39-2 94928-86-6 337526-85-9 337526-98-4 343978-78-9  
343978-79-0 370878-74-3 376367-95-2 474948-19-1 500295-32-9  
562043-95-2  
RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(dopant, **light-emitting** layer; organic EL elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)
- IT 478370-39-7 655236-05-8 655236-07-0 **655236-08-1**  
655236-10-5 655236-11-6 655236-12-7  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(hole-transport layer; organic EL elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)
- IT 453590-46-0 478262-76-9 478370-42-2 655236-06-9 655236-09-2  
655236-13-8  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(hole-transport or **light-emitting** layer; organic EL elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)
- IT 58328-31-7 453590-45-9 478262-77-0 478370-41-1 655236-14-9  
655236-15-0 655236-16-1 655236-17-2  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(**light-emitting** layer; organic EL elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)

L31 ANSWER 43 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:773843 HCAPLUS Full-text

DOCUMENT NUMBER: 139:298985

TITLE: Organic **electroluminescent device** and **display** with phenyl pyridine derivative

INVENTOR(S): Kita, Hiroshi; Yamada, Taketoshi; Matsuura, Mitsunobu; Inoue, Yoshio; Oi, Shuichi; Takayama, Shoichi

PATENT ASSIGNEE(S): Konica Co., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.

CODEN: JKXXAF

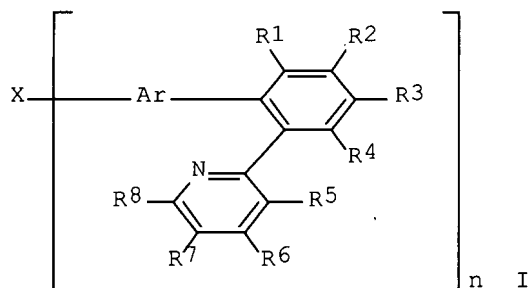
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO. ----- -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2003282270	A	20031003	JP 2002-82918	200203 25
			<--	
JP 3925265	B2	20070606		
PRIORITY APPLN. INFO.:			JP 2002-82918	200203 25
			<--	
OTHER SOURCE(S):	MARPAT 139:298985			
GI				



AB The invention refers to an organic **electroluminescent device** comprising at least one Ph pyridine compound I [Z = n-valent bridging group or single bond; Ar = divalent arylene; R1-8 - H or substituent wherein adjacent groups may join to form rings; n = 2 - 6].

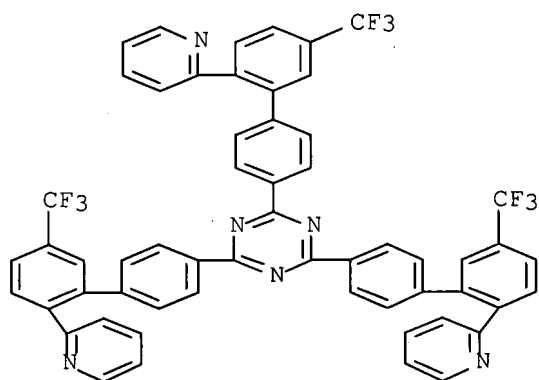
IT **608145-69-3**

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** and  
**display** with Ph pyridine derivative)

RN 608145-69-3 HCAPLUS

CN 1,3,5-Triazine, 2,4,6-tris[2'-(2-pyridinyl)-5'-(trifluoromethyl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)





IC ICM H05B033-22  
ICS C09K011-06; H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)  
ST **electroluminescent display device**  
phenyl pyridine  
IT **Electroluminescent devices**  
(displays; organic electroluminescent  
device and display with Ph pyridine derivative)  
IT **Luminescent screens**  
(electroluminescent; organic  
electroluminescent device and display  
with Ph pyridine derivative)  
IT 474304-10-4 **608145-69-3** 608145-70-6 608145-72-8  
608145-73-9 608145-74-0 608145-75-1 **608145-76-2**  
608145-77-3 608145-78-4 608145-79-5 608145-80-8 608145-81-9  
608145-82-0 608145-83-1 608145-84-2 608145-85-3 608145-86-4  
608145-87-5 608145-88-6 608145-89-7 608145-90-0 608145-91-1  
608145-92-2  
RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** and  
**display** with Ph pyridine derivative).

L31 ANSWER 44 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:374060 HCAPLUS Full-text

DOCUMENT NUMBER: 138:376151

TITLE: **Electroluminescence** elements with  
suppressed concentration quenching and good  
resistance to light oxidation, and  
**displays** and electric lamps using them

INVENTOR(S): Matsuo, Mikiko; Sato, Tetsuya; Sugiura,  
Hisanori; Okada, Hisashi; Arai, Kazumi

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan;  
Fuji Photo Film Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 37 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003142263

A

20030516

JP 2001-333315

200110  
30

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JP 3735288

B2

20060118

PRIORITY APPLN. INFO.:

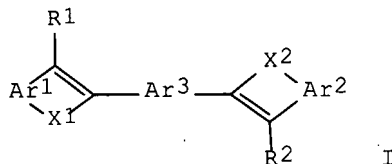
JP 2001-333315

200110  
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OTHER SOURCE(S):  
GI

MARPAT 138:376151



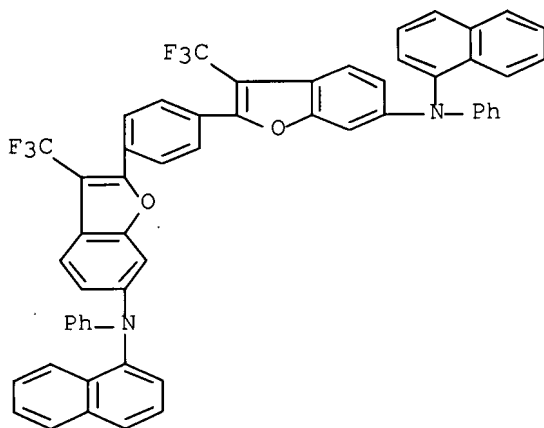
AB The **electroluminescence (EL)** element has between a pos. electrode and a neg. electrode a **light-emitting** layer containing the red **light-emitting** compds. I (Ar1, Ar2 = aryl, heterocyclic group; Ar3 = linking group containing aryl or heterocyclic group; R1, R2 = H, substituent; X1, X2 = O, S). The elements are useful for field emission **displays**, elec. lamps, backlights for LCD, etc.

IT 522634-71-5

RL: TEM (Technical or engineered material use); USES (Uses)  
(red organic **electroluminescence** elements with suppressed concentration quenching and good light oxidation resistance for **displays** and elec. lamps)

RN 522634-71-5 HCAPLUS

CN 6-Benzofuranamine, 2,2'-(1,4-phenylene)bis[N-1-naphthalenyl-N-phenyl-3-(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C07D307-80; C07D307-81; C07D307-82; C07D307-84; C07D333-58;  
C07D405-14; C07D409-14; C07D413-14; C09K011-06; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other

Related Properties)

Section cross-reference(s): 74, 76

- ST **electroluminescence device** red concn quenching prevention; benzofuran red org **electroluminescence display**; elec lamp **electroluminescence** light oxidn resistance
- IT Liquid crystal **displays**  
(backlight for; red organic **electroluminescence** elements with suppressed concentration quenching and good light oxidation resistance for **displays** and elec. lamps)
- IT Electric lamps  
Field emission **displays**  
(red organic **electroluminescence** elements with suppressed concentration quenching and good light oxidation resistance for **displays** and elec. lamps)
- IT **Electroluminescent devices**  
(red-emitting; red organic **electroluminescence** elements with suppressed concentration quenching and good light oxidation resistance for **displays** and elec. lamps)
- IT 41014-33-9 522634-62-4 522634-63-5 522634-64-6 522634-65-7  
522634-66-8 522634-67-9 522634-68-0 522634-69-1 522634-70-4  
**522634-71-5** 522634-72-6 522634-73-7 522634-74-8  
522634-75-9 522634-76-0 522634-77-1  
RL: TEM (Technical or engineered material use); USES (Uses)  
(red organic **electroluminescence** elements with suppressed concentration quenching and good light oxidation resistance for **displays** and elec. lamps)

L31 ANSWER 45 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:867323 HCAPLUS Full-text

DOCUMENT NUMBER: 137:377243

TITLE: Blue- and white-emitting organic **electroluminescent device** for **display** and light source

INVENTOR(S): Ishii, Masahiko; Noda, Hiroshi; Mori, Tomohiko; Taga, Yasunori; Takeuchi, Hisato; Mouri, Makoto; Igarashi, Tatsuya; Okada, Hisashi

PATENT ASSIGNEE(S): Toyota Central Research and Development Laboratories, Inc., Japan; Fuji Photo Film Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002329578	A	20021115	JP 2001-133598	20010427

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PRIORITY APPLN. INFO.:

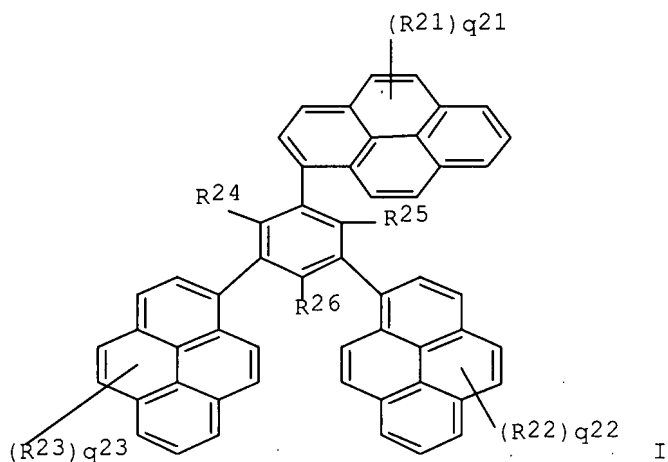
JP 2001-133598

20010427

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OTHER SOURCE(S): MARPAT 137:377243

GI



AB The **device** has a **light-emitting** layer containing organic compds. I (R21-R26 = substituent; q21-q23 = 0-9) and 0.1-10 mol% fluorescent dyes between electrodes. Alternatively, the device has (1) a primary **light-emitting** layer containing the compds. I and a secondary **light-emitting** layer containing  $\geq 2$ -substituted quinolines ( $\geq 2$  of  $-[C(R_n):C(R'_n)]_n-Q$  substituents;  $R_n, R'_n$  = substituent;  $n \geq 1$ ; Q = aromatic) or (2) a I-containing **light-emitting** layer in which at least a part of the layer contains the above quinolines. The former **device** emits blue light and the latter **device** using both I and the quinolines emits both blue and orange lights to give white light in high efficiency and durability.

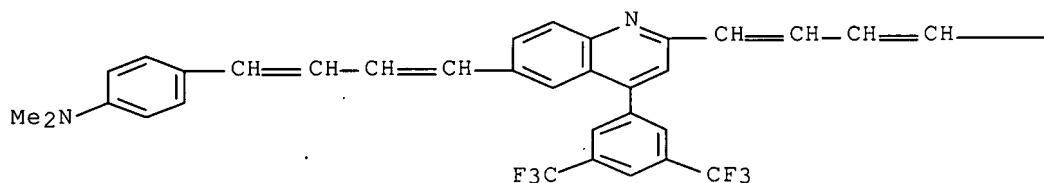
IT 344403-49-2

RL: DEV (Device component use); USES (Uses)  
(**light-emitting** layer containing; blue- and white-emitting organic **electroluminescent device** for **display** and light source)

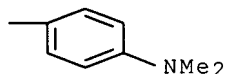
RN 344403-49-2 HCAPLUS

CN Benzenamine, 4,4'-[[4-[3,5-bis(trifluoromethyl)phenyl]-2,6-quinolinediyl]di-1,3-butadiene-4,1-diyl]bis[N,N-dimethyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM H05B033-14  
ICS C09K011-06; H05B033-22

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 25, 74

ST org **electroluminescent device** blue white  
emission; fluorescent dye org **electroluminescent  
device**; pyrene benzene deriv org **electroluminescent  
device**; quinoline deriv org **electroluminescent  
device**; blue white **electroluminescent  
device display** light source

IT Fluorescent dyes  
(blue- and white-emitting organic **electroluminescent  
device** for **display** and light source)

IT **Electroluminescent devices**  
(blue-emitting; blue- and white-emitting organic  
**electroluminescent device** for **display**  
and light source)

IT 198-55-0, Perylene 138685-19-5 144810-07-1  
RL: DEV (Device component use); USES (Uses)  
(fluorescent dye; blue- and white-emitting organic  
**electroluminescent device** for **display**  
and light source)

IT 167218-46-4 344403-44-7 **344403-49-2** 349666-25-7  
RL: DEV (Device component use); USES (Uses)  
(**light-emitting** layer containing; blue- and  
white-emitting organic **electroluminescent device**  
for **display** and light source)

L31 ANSWER 46 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2002:867322 HCAPLUS Full-text  
DOCUMENT NUMBER: 137:377521  
TITLE: Organic **electroluminescent  
device** with high emission efficiency and  
long service life, and its **display**  
device

INVENTOR(S): Matsuura, Mitsunobu; Oshiyama, Tomohiro; Ueda,  
Noriko; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Co., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002329577	A	20021115	JP 2001-131667	200104 27

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PRIORITY APPLN. INFO.:

JP 2001-131667

200104

27

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OTHER SOURCE(S): MARPAT 137:377521

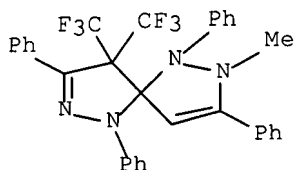
AB The **electroluminescent (EL) device** has a **light-emitting** layer containing an organic compound with band gap 2.96-3.80 eV and mol. weight 600-2000 and a phosphor. The **display** has (A) the above **EL device** or (B) a conversion layer for absorption of the emission of the above **EL device** and emission with different maximum wavelength. The use of  $\geq 2$  **EL devices** or conversion layers with different maximum emission wavelength enables full-color **display** devices. The **display** device shows low elec. power consumption because of high emission efficiency to improve service life.

IT 475057-09-1

RL: DEV (Device component use); USES (Uses)  
 (light-emitting layer containing; organic  
**electroluminescent device** with high emission  
 efficiency and long service life for full-color **display**  
 device)

RN 475057-09-1 HCAPLUS

CN 1,2,6,7-Tetraazaspiro[4.4]nona-2,8-diene, 7-methyl-1,3,6,8-  
 tetraphenyl-4,4-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-12; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 73

ST **electroluminescent full color display**IT **Electroluminescent devices**

(displays; organic **electroluminescent**  
**device** with high emission efficiency and long service  
 life for full-color **display** device)

IT **Luminescent screens**

(**electroluminescent**; organic  
**electroluminescent device** with high emission  
 efficiency and long service life for full-color **display**  
 device)

IT Optical filters

(organic **electroluminescent device** with high  
 emission efficiency and long service life for full-color  
**display** device)

IT 7789-24-4, Lithium fluoride, uses

RL: DEV (Device component use); USES (Uses)  
 (cathode buffer layer; organic **electroluminescent**  
**device** with high emission efficiency and long service  
 life for full-color **display** device)

IT 12254-04-5, Aluminum barium magnesium oxide (Al10BaMgO17)  
 13778-49-9

RL: DEV (Device component use); USES (Uses)  
 (color conversion filter containing; organic **electroluminescent device** with high emission efficiency and long service life for full-color **display** device)

IT 405171-47-3 405171-49-5 405171-50-8 405171-53-1 405171-54-2  
 405171-87-1 405172-07-8 405172-16-9 405173-85-5 426267-90-5  
 426267-91-6 426267-92-7 **475057-09-1**

RL: DEV (Device component use); USES (Uses)  
 (**light-emitting** layer containing; organic **electroluminescent device** with high emission efficiency and long service life for full-color **display** device)

IT 19205-19-7 51325-95-2 144810-07-1

RL: DEV (Device component use); USES (Uses)  
 (phosphor, **light-emitting** layer containing; organic **electroluminescent device** with high emission efficiency and long service life for full-color **display** device)

L31 ANSWER 47 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:465654 HCAPLUS Full-text

DOCUMENT NUMBER: 137:39157

TITLE: Organic **electroluminescent** element, material and **display**

INVENTOR(S): Yamada, Taketoshi; Ueda, Noriko; Matsuura, Mitsunobu; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Co., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 45 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

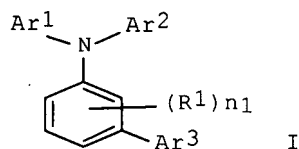
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2002175883	A	20020621	JP 2001-231650	20010731
			<--	
PRIORITY APPLN. INFO.:			JP 2000-285050	A 20000920
			<--	
			JP 2000-292124	A 20000926

OTHER SOURCE(S): MARPAT 137:39157

GI



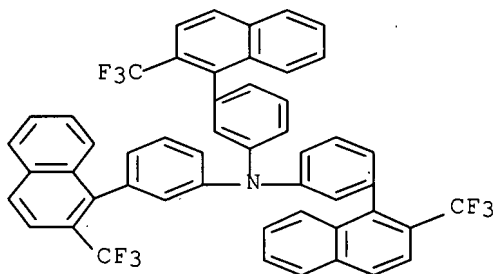
AB The invention refers to an organic **electroluminescent device** comprising the compound I [Ar1-3 = (un)substituted aromatic hydrocarbon(heterocyclyl); R1 = alkyl, halo, alkoxy; n1 = 0 - 4].

IT **436086-54-3**

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent** element, material and **display**)

RN 436086-54-3 HCAPLUS

CN Benzenamine, 3-[2-(trifluoromethyl)-1-naphthalenyl]-N,N-bis[3-[2-(trifluoromethyl)-1-naphthalenyl]phenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C07D215-12; C09K011-06; H05B033-04; H05B033-12; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent device** blue violet luminescence

IT **Electroluminescent devices**

(organic **electroluminescent** element, material and **display**)

IT	436086-40-7	436086-41-8	436086-42-9	436086-43-0	436086-44-1
	436086-45-2	436086-46-3	436086-47-4	436086-48-5	436086-49-6
	436086-50-9	436086-51-0	436086-52-1	436086-53-2	
	<b>436086-54-3</b>	<b>436086-55-4</b>	436086-56-5		
	436086-57-6	436086-58-7	436086-59-8	436086-60-1	436086-61-2
	436086-62-3	436086-63-4	436086-64-5	<b>436086-65-6</b>	
	436086-66-7	436086-67-8	436086-68-9	<b>436086-69-0</b>	
	436086-70-3	436086-71-4			

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent** element, material and **display**)

IT 436086-36-1P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(organic **electroluminescent** element, material and **display**)

IT 436086-39-4P



RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(organic **electroluminescent** element, material and **display**)

IT 86-58-8 90-14-2,  $\alpha$ -Iodo-naphthalene 108-36-1,  
1,3-Dibromobenzene 134-32-7,  $\alpha$ -Naphthyl amine 591-19-5,  
3-Bromoaniline 363607-69-6

RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic **electroluminescent** element, material and **display**)

IT 174846-53-8P, Tris(3-bromo phenyl)amine 436086-37-2P  
436086-38-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)  
(organic **electroluminescent** element, material and **display**)

L31 ANSWER 48 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:349431 HCAPLUS Full-text

DOCUMENT NUMBER: 136:377566

TITLE: Red organic **electroluminescence**  
elements with good color stability and high  
brightness for **displays**

INVENTOR(S): Ishibashi, Tadashi; Ichimura, Mari; Tamura,  
Shinichiro; Ueda, Naoyuki

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 31 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

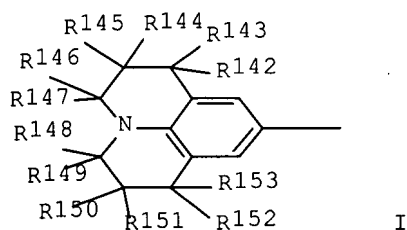
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002134276	A	20020510	JP 2000-329902	200010 30
WO 2003091357	A1	20031106	WO 2002-JP4097	200204 24
EP 1498465	A1	20050119	EP 2002-722757	200204 24
US 2004202891	A1	20041014	US 2003-297017	200305 20
US 2006051617	A1	20060309	US 2005-262019	200510 27

PRIORITY APPLN. INFO.:

<--  
 JP 2000-329902 A 200010  
 30  
 <--  
 WO 2002-JP4097 W 200204  
 24  
 <--  
 US 2003-297017 A1 200305  
 20  
 <--

OTHER SOURCE(S): MARPAT 136:377566  
 GI



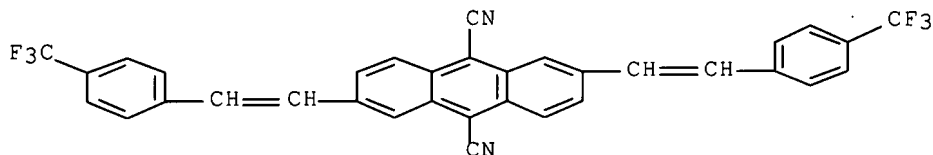
AB The **electroluminescence (EL)** elements contain aminostyryl compds. Y1CH:CHX1CH:CHY2 and/or Y3CH:CHX2 [X1 = substituted anthracenylene (substituent = halo, nitro, cyano, CF3, etc.); X2 = (un)substituted Ph, naphthalenyl, anthracenyl, phenanthrenyl, pyrenyl (substituent = H, halo, nitro, cyano, CF3); Y1-3 = H, alkyl, aryl that may contain C6H4NZ1Z2, I, or (un)substituted Ph; Z1, Z2 = H, alkyl, aryl; R142-153 = H, alkyl, aryl, alkoxy, halo, etc.].

IT 422510-72-3

RL: TEM (Technical or engineered material use); USES (Uses)  
 (red organic **EL** elements with good color stability and  
 high brightness for **displays**)

RN 422510-72-3 HCAPLUS

CN 9,10-Anthracenedicarbonitrile, 2,6-bis[2-[4-(trifluoromethyl)phenyl]ethenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 73

ST org **electroluminescence** element red aminostyryl  
 brightness; **EL display** aminostyryl phosphor red

stability  
 IT Phosphors  
     (electroluminescent; red organic EL elements  
     with good color stability and high brightness for  
     displays)  
 IT Electroluminescent devices  
     (red-emitting; red organic EL elements with good color  
     stability and high brightness for displays)  
 IT 4733-39-5  
     RL: TEM (Technical or engineered material use); USES (Uses)  
     (hole-blocking layer; red organic EL elements with good  
     color stability and high brightness for displays)  
 IT 101247-14-7 127697-16-9 253869-00-0 261632-47-7 261632-87-5  
     321709-39-1 321735-48-2 321735-63-1 422510-46-1 422510-49-4  
     422510-67-6 422510-70-1 422510-72-3 422510-75-6  
     422510-76-7 422510-78-9 422510-81-4 422510-83-6 422510-84-7  
     422510-85-8  
     RL: TEM (Technical or engineered material use); USES (Uses)  
     (red organic EL elements with good color stability and  
     high brightness for displays)

L31 ANSWER 49 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:237976 HCAPLUS Full-text

DOCUMENT NUMBER: 136:270271

TITLE: Organic electroluminescent element and  
         organic electroluminescent material  
         used therefor

INVENTOR(S): Ueda, Noriko; Matsuura, Mitsunori; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Corporation, Japan

SOURCE: Eur. Pat. Appl., 72 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

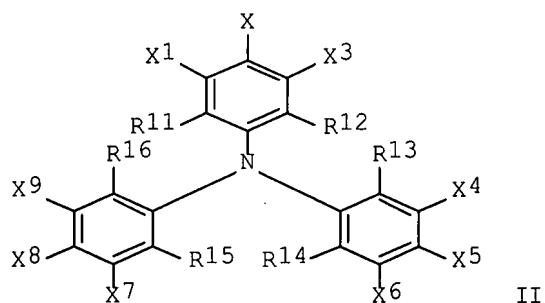
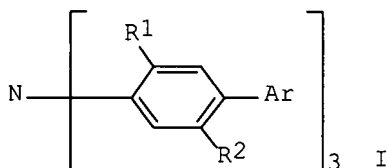
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1191821	A1	20020327	EP 2001-122501	200109 21
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002249765	A	20020906	JP 2001-256036	200108 27
<--				
US 2002094452	A1	20020718	US 2001-962483	200109 24
<--				
US 6723455	B2	20040420		
PRIORITY APPLN. INFO.:			JP 2000-290466	A 200009 25
<--				
			JP 2000-385286	A 200012

&lt;--

OTHER SOURCE(S): MARPAT 136:270271  
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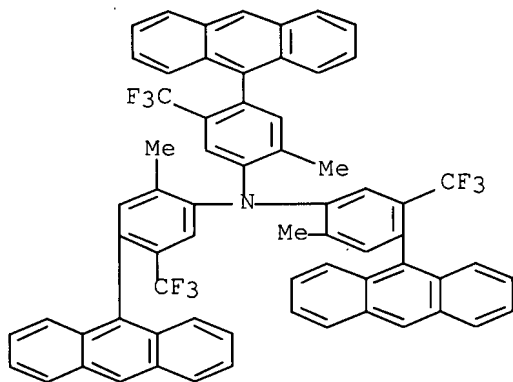
AB **Electroluminescent** materials are described by the general formula I and II (R1, R2 = independently selected substituents; Ar = (un)substituted aromatic ring or (un)substituted aromatic heterocyclic ring; and R11-16, X1-9 = independently selected H or other substituents with the sum of the steric parameters for R11-16 being  $\leq -2.0$ ). **Electroluminescent devices** employing the materials and **displays** employing the devices are also described.

IT **405171-51-9**

RL: DEV (Device component use); USES (Uses)  
(**electroluminescent** materials based on triphenylamine  
derivs. and organic **electroluminescent devices**  
using them)

RN 405171-51-9 HCAPLUS

CN Benzenamine, 4-(9-anthracenyl)-N,N-bis[4-(9-anthracenyl)-2-methyl-5-(trifluoromethyl)phenyl]-2-methyl-5-(trifluoromethyl)- (9CI) (CA  
INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06; H01L051-20

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 25, 76

ST triphenylamine deriv **electroluminescent device**  
material

IT Luminescent substances  
(**electroluminescent; electroluminescent**  
materials based on triphenylamine derivs. and organic  
**electroluminescent devices** using them)

IT **Electroluminescent devices**  
(organic; **electroluminescent** materials based on  
triphenylamine derivs. and organic **electroluminescent**  
**devices** using them)

IT 405171-46-2 405171-47-3 405171-48-4 405171-49-5 405171-50-8  
**405171-51-9** 405171-52-0 405171-53-1 405171-54-2  
405171-57-5 405171-87-1 405172-07-8 405172-16-9 405172-39-6  
405172-50-1 405172-65-8 **405172-85-2** **405173-00-4**  
405173-23-1 405173-85-5 405174-01-8

RL: DEV (Device component use); USES (Uses)  
(**electroluminescent** materials based on triphenylamine  
derivs. and organic **electroluminescent devices**  
using them)

IT 363607-70-9P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(**electroluminescent** materials based on triphenylamine  
derivs. and organic **electroluminescent devices**  
using them)

IT 95-78-3, 2,5-Dimethylaniline 1122-42-5, 2,5-Dimethyliodobenzene  
1205-64-7 7726-95-6, Bromine, reactions 13922-41-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(**electroluminescent** materials based on triphenylamine  
derivs. and organic **electroluminescent devices**  
using them)

IT 405171-44-0P 405171-45-1P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)  
(**electroluminescent** materials based on triphenylamine  
derivs. and organic **electroluminescent devices**  
using them)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE

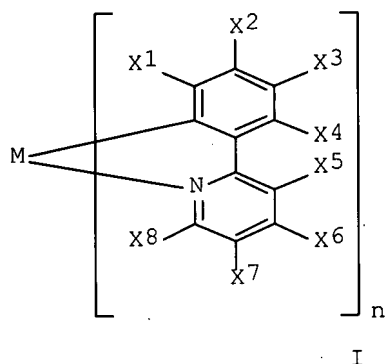
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L31 ANSWER 50 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:237969 HCAPLUS Full-text  
 DOCUMENT NUMBER: 136:286688  
 TITLE: **Electroluminescent display**  
**device** with high brightness and  
 efficiency comprising metal coordination  
 compound  
 INVENTOR(S): Takiguchi, Takao; Mizutani, Hidemasa; Okada,  
 Shinjiro; Tsuboyama, Akira; Miura, Seishi;  
 Moriyama, Takashi; Igawa, Satoshi; Kamatani,  
 Jun; Furugori, Manabu  
 PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan  
 SOURCE: Eur. Pat. Appl., 49 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
EP 1191613	A2	20020327	EP 2001-122938	200109 25
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EP 1191613	A3	20020717		
EP 1191613	B1	20060329		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2003146996	A	20030521	JP 2001-284599	200109 19
<--				
US 2002064681	A1	20020530	US 2001-961075	200109 24
<--				
US 6815091	B2	20041109		
EP 1598879	A2	20051123	EP 2005-18186	200109 25
<--				
R: DE, FR, GB				
US 2005014025	A1	20050120	US 2004-912128	200408 06
<--				
US 7026062	B2	20060411		
US 2006014047	A1	20060119	US 2005-226258	200509 15
<--				
PRIORITY APPLN. INFO.:			JP 2000-292492	A 200009 26
<--				

JP 2000-292493	A	200009 26
<--		
JP 2000-358741	A	200011 27
<--		
JP 2000-358742	A	200011 27
<--		
JP 2001-255537	A	200108 27
<--		
JP 2001-284599	A	200109 19
<--		
US 2001-961075	A3	200109 24
<--		
EP 2001-122938	A3	200109 25
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US 2004-912128	A3	200408 06
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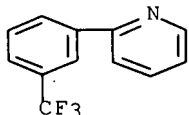
OTHER SOURCE(S): MARPAT 136:286688  
GI



AB A luminescence device is principally constituted by a pair of electrodes and an organic compound layer disposed between. The layer contains a metal coordination compound represented by the formula I ( $M = \text{Ir, Rh, Pd}$ ;  $n = 2, 3$ ;  $X1-X8 = \text{halogen, nitro, trifluoromethyl, C1-8-trialkylsilyl, C2-20-alkyl}$  capable of including one or two non-neighboring methylene groups which can be replaced with  $-\text{O}-$ ,  $-\text{S}-$ ,  $-\text{CO}-$ ,  $-\text{CO}-\text{O}-$ ,  $-\text{O}-\text{CO}-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{C}.\text{tplbond}.\text{C}-$  and capable of including hydrogen atom which can be replaced with fluorine atom; with the proviso that at least one of  $X1$

to X8 is a substituent other than hydrogen atom, and X2 and X3 cannot be fluorine atom at the same time). The object of the present invention is to provide an **electroluminescence device** capable of providing a high-efficiency luminescent state at a high brightness (or luminance) for a long period while minimizing the deterioration in luminescence in energized state.

IT 5957-84-6P, 2-(3-Trifluoromethylphenyl)pyridine  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation);  
 PREP (Preparation); RACT (Reactant or reagent)  
 (in synthesis of metal coordination compound)  
 RN 5957-84-6 HCAPLUS  
 CN Pyridine, 2-[3-(trifluoromethyl)phenyl]- (CA INDEX NAME)



IC ICM H01L051-20  
 ICS H05B033-14; C09K011-06  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 73  
 ST **electroluminescent display device**  
 iridium palladium rhodium coordination compd  
 IT **Electroluminescent devices**  
 Luminescence, **electroluminescence**  
 (**electroluminescence display device**  
 with high brightness and efficiency comprising metal coordination  
 compound)  
 IT Phosphorescence  
 (**electroluminescence display device**  
 with high brightness and efficiency comprising metal coordination  
 compound in relation to)  
 IT 405890-12-2 405890-13-3 405890-14-4 405890-15-5 405890-16-6  
 405890-17-7 405890-18-8 405890-19-9 405890-20-2 405890-23-5  
 405890-26-8 405890-27-9 405890-28-0 405890-29-1 405890-30-4  
 405890-31-5 405890-32-6 405890-33-7 405890-34-8 405890-35-9  
 405890-36-0 405890-37-1  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (**electroluminescence display device**  
 with high brightness and efficiency comprising metal coordination  
 compound)  
 IT 387859-70-3P 405890-11-1P 405890-24-6P 405890-25-7P  
 405927-91-5P 405927-92-6P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
 preparation); PREP (Preparation); USES (Uses)  
 (**electroluminescence display device**  
 with high brightness and efficiency comprising metal coordination  
 compound)  
 IT 405890-21-3P 405890-22-4P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (**electroluminescence display device**  
 with high brightness and efficiency comprising metal coordination  
 compound)  
 IT 5957-84-6P, 2-(3-Trifluoromethylphenyl)pyridine 6134-56-1P  
 188527-56-2P 361147-22-0P, 2-(3-Fluorophenyl)pyridine



391604-55-0P 405888-54-2P 405888-55-3P

405888-56-4P 405888-57-5P 405888-58-6P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation);

PREP (Preparation); RACT (Reactant or reagent)

(in synthesis of metal coordination compound)

IT 98-80-6, Phenylboronic acid 109-04-6, 2-Bromopyridine 119-64-2,  
 1,2,3,4-Tetrahydronaphthalene 393-37-3,  
 5-Bromo-2-fluorobenzotrifluoride 445-01-2,  
 5-Bromo-2-chlorobenzotrifluoride 768-35-4, 3-Fluorophenylboronic  
 acid 1423-26-3, 3-Trifluoromethylphenylboronic acid  
 15635-87-7, Iridium acetylacetonate 52334-81-3,  
 2-Chloro-5-trifluoromethylpyridine 144025-03-6,  
 2,4-Difluorophenylboronic acid 218777-23-2, 2-Pyridylzinc bromide  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (in synthesis of metal coordination compound)

L31 ANSWER 51 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:58431 HCAPLUS Full-text

DOCUMENT NUMBER: 130:146278

TITLE: Fluoranethene derivative for organic  
**electroluminescent device**

INVENTOR(S): Nakatsuka, Masakatsu; Kitahon, Noriko

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 106 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 11012205	A	19990119	JP 1998-107828	199804 17
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JP 3794819	B2	20060712		
PRIORITY APPLN. INFO.:			JP 1997-102081	A 199704 18
			<--	

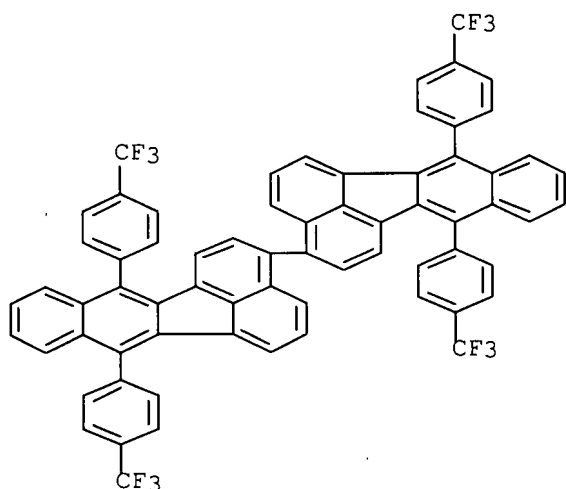
AB The organic **electroluminescent device** has a layer containing bis-4,4'-benzo[κ]  
 fluoranethene derivative between a pair of electrodes. The organic  
**electroluminescent device** shows the excellent luminance and is useful as a  
 backlight of liquid crystal **display**.

IT 220108-14-5P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)(fluoranethene derivative for organic **electroluminescent  
 device**)

RN 220108-14-5 HCAPLUS

CN 3,3'-Bibenzo[k]fluoranthene, 7,7',12,12'-tetrakis[4-  
 (trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



- IC ICM C07C025-22  
 ICS C07C043-168; C07C043-21; C07C043-225; C07C043-275; C07C047-546;  
 C07C049-697; C07C069-21; C07C069-76; C07C069-773; C07C205-06;  
 C07C211-50; C07C255-52; C07C321-28; C09K011-06; H05B033-14;  
 H05B033-22
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 25, 73
- ST fluoranethene deriv org **electroluminescent device**
- IT Polycyclic compounds  
 RL: PNU (Preparation, unclassified); RCT (Reactant); TEM (Technical  
 or engineered material use); PREP (Preparation); RACT (Reactant or  
 reagent); USES (Uses)  
 (aromatic; fluoranethene derivative for organic **electroluminescent  
 device**)
- IT Liquid crystal **displays**  
 (backlight of; fluoranethene derivative for organic  
**electroluminescent device**)
- IT **Electroluminescent devices**  
 (fluoranethene derivative for organic **electroluminescent  
 device**)
- IT Aromatic compounds  
 RL: PNU (Preparation, unclassified); RCT (Reactant); TEM (Technical  
 or engineered material use); PREP (Preparation); RACT (Reactant or  
 reagent); USES (Uses)  
 (polycyclic; fluoranethene derivative for organic  
**electroluminescent device**)
- IT 220107-81-3P 220107-82-4P 220107-97-1P 220108-41-8P  
 220108-42-9P 220108-43-0P 220108-45-2P 220108-46-3P  
 220108-48-5P 220108-57-6P 220108-64-5P 220108-72-5P  
 RL: PNU (Preparation, unclassified); RCT (Reactant); TEM (Technical  
 or engineered material use); PREP (Preparation); RACT (Reactant or  
 reagent); USES (Uses)  
 (fluoranethene derivative for organic **electroluminescent  
 device**)
- IT 187086-26-6P 220107-75-5P, 3,3'-Bibenzo[k]fluoranthene  
 220107-76-6P 220107-77-7P 220107-79-9P 220107-80-2P  
 220107-83-5P 220107-84-6P 220107-85-7P 220107-86-8P  
 220107-87-9P 220107-88-0P 220107-89-1P 220107-91-5P  
 220107-92-6P 220107-93-7P 220107-94-8P 220107-95-9P

220107-96-0P	220107-98-2P	220107-99-3P	220108-00-9P
220108-02-1P	220108-03-2P	220108-04-3P	220108-05-4P
220108-06-5P	220108-07-6P	220108-08-7P	220108-09-8P
220108-10-1P	220108-11-2P	220108-12-3P	220108-13-4P
<b>220108-14-5P</b>	220108-15-6P	220108-16-7P	220108-17-8P
220108-18-9P	220108-19-0P	220108-20-3P	220108-21-4P
220108-22-5P	220108-23-6P	220108-24-7P	220108-25-8P
220108-26-9P	220108-28-1P	220108-29-2P	220108-30-5P
220108-31-6P	220108-32-7P	220108-34-9P	220108-35-0P
220108-36-1P	220108-37-2P	220108-38-3P	220108-39-4P
220108-49-6P	220108-50-9P	220108-51-0P	220108-52-1P
220108-55-4P	220108-59-8P	220108-62-3P	220108-63-4P
220108-65-6P	220108-66-7P	220108-67-8P	220108-68-9P
220108-70-3P	220108-71-4P	220108-73-6P	220108-74-7P
220108-75-8P	220108-76-9P	220108-77-0P	220108-78-1P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(fluoranthene derivative for organic **electroluminescent device**)

IT 16391-62-1, 7,12-Diphenylbenzo[κ]fluoranthene 220108-79-2,  
 4-Bromo-7,12-bis(4'-methylphenyl)benzo[κ]fluoranthene 220108-80-5,  
 4-Bromo-7-phenyl-12-chlorobenzo[κ]fluoranthene 220108-81-6,  
 4-Bromo-7,12-bis(4'-methoxyphenyl)-9,10-  
 dichlorobenzo[κ]fluoranthene 220108-82-7 220108-84-9,  
 4-Bromo-7,12-di-n-propylbenzo[κ]fluoranthene 220108-85-0,  
 4-Bromo-7,12-diisopropylbenzo[κ]fluoranthene 220108-86-1,  
 4-Bromo-7,12-di-n-butylbenzo[κ]fluoranthene 220108-87-2,  
 4-Bromo-7,12-di-n-pentylbenzo[κ]fluoranthene 220108-88-3,  
 4-Bromo-7,12-di-n-hexylbenzo[κ]fluoranthene 220108-89-4,  
 4-Bromo-7,12-dicyclohexylbenzo[κ]fluoranthene 220108-90-7,  
 4-Bromo-7,12-di-n-octylbenzo[κ]fluoranthene 220108-91-8,  
 4-Bromo-7,12-di-n-dodecylbenzo[κ]fluoranthene 220108-92-9,  
 4-Bromo-7,12-diethyl-9,10-di-n-butylbenzo[κ]fluoranthene  
 220108-93-0, 4-Bromo-7,12-diethyl-8-methylbenzo[κ]fluoranthene  
 220108-94-1, 4-Bromo-7,12-diethyl-8,11-dimethylbenzo[κ]fluoran-  
 thene 220108-95-2, 4-Bromo-7,8,9,10,11,12-hexa-n-  
 propylbenzo[κ]fluoranthene 220108-96-3, 4-Bromo-7,12-diethyl-  
 9,10-tetramethylenebenzo[κ]fluoranthene 220108-97-4,  
 4-Bromo-7,12-diphenyl-8,11-dimethoxybenzo[κ]fluoranthene  
 220108-99-6, 4-Bromo-7,12-bis(4'-methylphenyl)-9,10-  
 dimethoxybenzo[κ]fluoranthene 220109-00-2,  
 4-Bromo-7,12-dicinnamylbenzo[κ]fluoranthene 220109-01-3,  
 4-Bromo-7,12-diphenyl-9,10-dibenzyl[κ]fluoranthene  
 220109-02-4, 4-Bromo-7-phenyl-12-methylbenzo[κ]fluoranthene  
 220109-03-5, 4-Bromo-7,12-bis(3'-methylphenyl)benzo[κ]fluorant-  
 hene 220109-04-6, 4-Bromo-7,12-bis(4'-  
 ethylphenyl)benzo[κ]fluoranthene 220109-05-7,  
 4-Bromo-7,12-bis(4'-isopropylphenyl)benzo[κ]fluoranthene  
 220109-06-8, 4-Bromo-7,12-bis(4'-tert-butylphenyl)benzo[κ]fluo-  
 ranthene 220109-07-9, 4-Bromo-7,12-bis(4'-  
 cyclohexylphenyl)benzo[κ]fluoranthene 220109-08-0,  
 4-Bromo-7,12-bis(4'-n-decylphenyl)benzo[κ]fluoranthene  
 220109-09-1, 4-Bromo-7,12-bis(4'-n-hexadecylphenyl)benzo[κ]flu-  
 oranthene 220109-10-4, 4-Bromo-7,12-bis(3',4'-  
 dimethylphenyl)benzo[κ]fluoranthene 220109-11-5,

4-Bromo-7,12-bis(2',4',6'-trimethylphenyl)benzo[κ]fluoranthene  
 220109-12-6, 4-Bromo-7-phenyl-12-(4'-methylphenyl)benzo[κ]fluoranthene 220109-13-7, 4-Bromo-7,12-bis(4'-trifluoromethylphenyl)benzo[κ]fluoranthene 220109-15-9,  
 4-Bromo-7,12-bis(4'-N,N-dimethylaminophenyl)benzo[κ]fluoranthene 220109-16-0, 4-Bromo-7,12-bis(4'-methoxyphenyl)benzo[κ]fluoranthene 220109-17-1, 4-Bromo-7,12-bis(4'-n-butoxyphenyl)benzo[κ]fluoranthene 220109-18-2,  
 4-Bromo-7,12-bis(4'-n-octyloxyphenyl)benzo[κ]fluoranthene 220109-19-3, 4-Bromo-7,12-bis(4'-n-tetradecyloxyphenyl)benzo[κ]fluoranthene 220109-20-6 220109-21-7 220109-22-8,  
 4-Bromo-7,12-bis(3'-methyl-4'-chlorophenyl)benzo[κ]fluoranthene 220109-23-9 220109-24-0, 4-Bromo-7,12-bis(4'-fluorophenyl)benzo[κ]fluoranthene 220109-25-1,  
 4-Bromo-7,12-bis(4'-chlorophenyl)benzo[κ]fluoranthene 220109-26-2, 4-Bromo-7,12-bis(2'-ethoxyphenyl)benzo[κ]fluoranthene 220109-27-3, 4-Bromo-7,12-bis(1'-naphthyl)benzo[κ]fluoranthene 220109-28-4,  
 4-Bromo-7,12-bis(2'-naphthyl)benzo[κ]fluoranthene 220109-29-5, 4-Bromo-7,12-bis(4'-phenylphenyl)benzo[κ]fluoranthene 220109-30-8 220109-31-9, 4-Bromo-7,12-bis(4'-benzyloxyphenyl)benzo[κ]fluoranthene 220109-32-0,  
 4-Bromo-7,12-bis[4'-(2"-ethoxyethyl)phenyl]benzo[κ]fluoranthene 220109-33-1 220109-34-2, 4-Bromo-7,12-bis(4'-phenoxyphenyl)benzo[κ]fluoranthene 220109-35-3,  
 4-Bromo-7,12-bis(4'-nitrophenyl)benzo[κ]fluoranthene 220109-37-5, 4-Bromo-7,12-diphenyl-9,10-dimethylbenzo[κ]fluoranthene 220109-38-6,  
 4-Bromo-7,12-bis(4'-isopropylphenyl)-8,11-dimethylbenzo[κ]fluoranthene 220109-39-7,  
 4-Bromo-7,9,10,12-tetraphenylbenzo[κ]fluoranthene 220109-40-0, 4-Bromo-8,11-bis(4'-methylphenyl)benzo[κ]fluoranthene 220109-41-1, 4-Bromo-7,12-dimethyl-8,11-diphenylbenzo[κ]fluoranthene 220109-42-2,  
 4-Bromo-7,12-diethyl-9,10-diphenylbenzo[κ]fluoranthene 220109-43-3, 4-Bromo-7,8,11,12-tetraphenylbenzo[κ]fluoranthene 220109-44-4, 4-Bromo-7,12-bis(4'-methylphenyl)-8,11-diphenylbenzo[κ]fluoranthene 220109-45-5,  
 4-Bromo-7,12-bis(4'-methoxyphenyl)-8,11-bis(3'-methylphenyl)benzo[κ]fluoranthene 220109-46-6,  
 4-Bromo-7,12-dimethyl-8,9,10,11-tetraphenylbenzo[κ]fluoranthene 220109-47-7, 4-Bromo-7,8,9,10,11,12-hexaphenylbenzo[κ]fluoranthene 220109-48-8,  
 4-Bromo-7,12-bis(4'-methylphenyl)-8,11-diphenoxybenzo[κ]fluoranthene 220109-49-9, 4-Bromo-7,12-dicyanobenzo[κ]fluoranthene 220109-50-2 220109-52-4, 4-Bromo-7,12-diphenyl-8,11-bis(ethoxycarbonyl)benzo[κ]fluoranthene 220109-53-5,  
 4-Bromo-7,12-bis(ethoxycarbonyl)benzo[κ]fluoranthene 220109-54-6, 4-Bromo-7,12-bis(n-hexyloxycarbonyl)benzo[κ]fluoranthene 220109-55-7, 4-Bromo-7,12-bis(phenoxy carbonyl)benzo[.kappa.]fluoranthene 220109-56-8, 4-Bromo-7,12-diphenyl-9,10-diformylbenzo[κ]fluoranthene 220109-57-9,  
 4-Bromo-7,12-diphenyl-9,10-bis(phenylcarbonyl)benzo[κ]fluoranthene 220109-58-0, 4-Bromo-7,12-diphenyl-8,11-

bis(acetoxy)benzo[k]fluoranthene 220109-59-1,  
 7,12-Bis(ethoxycarbonyl)benzo[k]fluoranthene 220109-60-4  
 220109-61-5  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (fluoranthene derivative for organic **electroluminescent device**)

L31 ANSWER 52 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:732405 HCAPLUS Full-text

DOCUMENT NUMBER: 128:8615

TITLE: Phenyltriazole derivative and organic  
**electroluminescent device**  
 using it

INVENTOR(S): Enokida, Toshio; Tamano, Michiko; Onikubo,  
 Shunichi; Okutsu, Satoshi

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 31 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

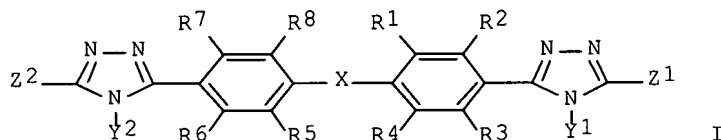
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09291274	A	19971111	JP 1996-107453	199604 26
			<--	
JP 3656318	B2	20050608	JP 1996-107453	199604 26
PRIORITY APPLN. INFO.:				
			<--	

OTHER SOURCE(S): MARPAT 128:8615  
 GI



AB The material is a phenyltriazole derivative I [R1-8 = H, halo, OH, CO2, cyano, NO2, amino, alkyl, alkoxy, C1-40 aryl, aryloxy, cycloalkyl, heterocyclic group; R1-R2, R3-R4, R5-R6, R7-R8 may form aromatic ring; Y1-2, Z1-2 = H, halo, alkyl, aryl, cycloalkyl, heterocyclic group; X = O, S, SO2, C:O, C:S, C:(CN)2, C:(CN)A, C:S:O, C:NCN, styryl, tolyl, butadiene, alkylene, CO, cycloalkylene, arylene, heterocyclic group; A = halo]. The **electroluminescent device** contains  $\geq 1$  of the material in  $\geq 1$  organic thin layer. The device is useful for a flat light source and an optical **display**. The material has good and stable electron-injecting property and the device shows high luminescent efficiency, brightness, and long service life.

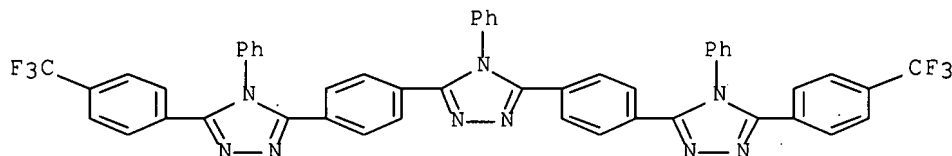
IT 198703-44-5

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(organic **electroluminescence device** containing phenyltriazole derivative having high electron-injecting property)

RN 198703-44-5 HCAPLUS

CN 4H-1,2,4-Triazole, 4-phenyl-3,5-bis[4-[4-phenyl-5-[4-(trifluoromethyl)phenyl]-4H-1,2,4-triazol-3-yl]phenyl]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 28

ST phenyltriazole electron transporter org **electroluminescent device**; triazole phenyl electron transporter **electroluminescent device**

IT **Electroluminescent devices**

(organic **electroluminescence device** containing phenyltriazole derivative having high electron-injecting property)

IT 198703-39-8P 198703-40-1P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(organic **electroluminescence device** containing phenyltriazole derivative having high electron-injecting property)

IT 198703-41-2 198703-42-3 198703-43-4 **198703-44-5**

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(organic **electroluminescence device** containing phenyltriazole derivative having high electron-injecting property)

IT 62-53-3, Benzenamine, reactions 613-94-5, Benzoic hydrazide 7158-32-9 43038-36-4 198703-45-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(organic **electroluminescence device** containing phenyltriazole derivative having high electron-injecting property)

L31 ANSWER 53 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:648628 HCAPLUS Full-text

DOCUMENT NUMBER: 127:301097

TITLE: Organic **electroluminescent device** containing distyryl compound

INVENTOR(S): Suzuki, Ichiro; Sakai, Toshio; Nakamura, Hiroaki

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09255949	A	19970930	JP 1996-64067	19960321

PRIORITY APPLN. INFO.:

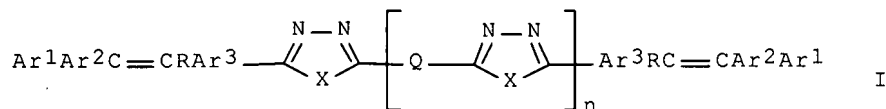
JP 1996-64067

19960321

OTHER SOURCE(S):

MARPAT 127:301097

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AB The device contains a distyryl compound I (Ar<sup>1</sup>-2 = C<sub>6</sub>-20 aromatic group, C<sub>2</sub>-18 heterocyclic group; Ar<sup>3</sup> = C<sub>6</sub>-20 aromatic group; R = H, C<sub>1</sub>-6 alkyl, C<sub>6</sub>-20 aromatic group; X = O, S, S connecting with C<sub>6</sub>-20 aromatic group; Q = C<sub>6</sub>-20 aromatic group, C<sub>1</sub>-6 alkylene; n = 0, 1). The device is useful for **displays**. The device shows high luminescent efficiency, thermostability, thin-film properties, and no transition to a crystal phase.

IT 197154-09-9P

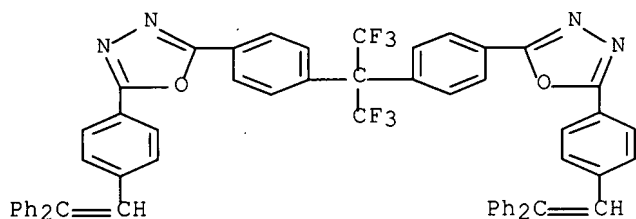
RL: DEV (Device component use); PNU (Preparation, unclassified);

PREP (Preparation); USES (Uses)

(organic **electroluminescent device** containing  
distyryl compound as **light-emitting material**)

RN 197154-09-9 HCAPLUS

CN 1,3,4-Oxadiazole, 2,2'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis[5-[4-(2,2-diphenylethenyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)

Section cross-reference(s): 28

ST distyryl compd org **electroluminescent device**IT **Electroluminescent devices**

(organic **electroluminescent device** containing  
distyryl compound as **light-emitting material**)

IT 197154-03-3P 197154-05-5P 197154-07-7P **197154-09-9P**  
 197154-11-3P 197154-13-5P 197154-15-7P 197154-17-9P  
 197154-19-1P 197154-20-4P 197154-21-5P 197154-22-6P  
 197154-24-8P 197154-25-9P 197154-27-1P 197154-28-2P  
 197154-29-3P 197154-30-6P 197154-31-7P 197154-32-8P  
 197154-33-9P 197154-34-0P 197154-35-1P 197154-36-2P  
 RL: DEV (Device component use); PNU (Preparation, unclassified);  
 PREP (Preparation); USES (Uses)  
 (organic **electroluminescent device** containing  
 distyryl compound as **light-emitting** material)

IT 197154-01-1P  
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (organic **electroluminescent device** containing  
 distyryl compound as **light-emitting** material)

IT 62-53-3, Benzenamine, reactions 92-67-1, 4-Aminobiphenyl  
 100-20-9, 1,4-Benzenedicarbonyl dichloride 104-94-9,  
 p-Methoxyaniline 106-49-0, p-Methylaniline, reactions 302-01-2,  
 Hydrazine, reactions **1102-92-7** 1314-80-3, Phosphorus  
 sulfide (P2S5) 7158-32-9 18708-44-6 19855-84-6 23730-63-4  
 43122-73-2 197153-71-2 197153-73-4 197153-75-6 197153-77-8  
 197153-79-0 197153-81-4 197153-83-6 197153-85-8 197153-87-0  
 197153-89-2 197153-91-6 197153-98-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (organic **electroluminescent device** containing  
 distyryl compound as **light-emitting** material)

L31 ANSWER 54 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:519436 HCAPLUS Full-text

DOCUMENT NUMBER: 127:197527

TITLE: **Light-emitting** material for  
 organo-**electroluminescence**  
**device** and organo-  
**electroluminescence device** for  
 which the **light-emitting**  
 material is adapted

INVENTOR(S): Tamano, Michiko; Enokida, Toshio

PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 31 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 786926	A2	19970730	EP 1997-300551	199701 29
			<--	
EP 786926	A3	19970806		
EP 786926	B1	20010822		
R: DE, FR, GB				
JP 09268283	A	19971014	JP 1997-7113	199701 20
			<--	
JP 3511825	B2	20040329		



US 5811834

A

19980922

US 1997-788436

199701

28

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PRIORITY APPLN. INFO.:

JP 1996-12488

A

199601

29

&lt;--

OTHER SOURCE(S):

MARPAT 127:197527

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Compds. for use in **electroluminescent devices** are described by the general formulas I and II (A-D are the same or different groups each = (un)substituted alkyl, (un)substituted monocyclic group, or (un)substituted fused polycyclic group, or A and B and/or C and D, together with the nitrogen atom to which they are attached, form a substituted or unsubstituted heterocyclic ring; R1-20 are independently selected from H, halogen atoms, (un)substituted alkyl, (un)substituted alkoxy, (un)substituted amino, (un)substituted monocyclic, or (un)substituted fused polycyclic groups; and X1-4 are independently selected from various linking groups). Television sets, **light-emitting devices**, copy machines, printers, liquid-crystal **displays, displays**, electrophotog. photoreceptors, photoelec. converters, solar cells, and image sensors containing **electroluminescent devices** employing the compds. are also described.

IT 194296-44-1

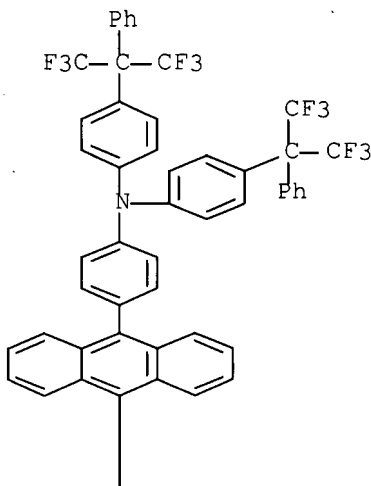
RL: DEV (Device component use); PRP (Properties); USES (Uses)

(**light-emitting** materials based on bis(aminophenyl)anthracene derivs. for organic **electroluminescent devices** and the **electroluminescent devices** and devices using them)

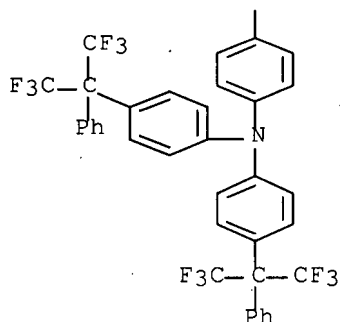
RN 194296-44-1 HCAPLUS

CN Benzenamine, 4,4'-(9,10-anthracenediyl)bis[N,N-bis[4-[2,2,2-trifluoro-1-phenyl-1-(trifluoromethyl)ethyl]phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



- IC ICM H05B033-14  
ICS C09K011-06; C07C211-55; C07C211-56
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 25, 52, 76
- ST **electroluminescent device** aminophenylanthracene  
deriv
- IT Photoelectric devices  
(converters; **light-emitting** materials based  
on bis(aminophenyl)anthracene derivs. for organic  
**electroluminescent devices** and the  
**electroluminescent devices** and devices  
using them)
- IT Phosphors  
(**electroluminescent**; **light-emitting**  
materials based on bis(aminophenyl)anthracene derivs. for organic  
**electroluminescent devices** and the  
**electroluminescent devices** and devices  
using them)
- IT **Electroluminescent devices**  
Electrophotographic apparatus  
Electrophotographic photoconductors (photoreceptors)  
Liquid crystal displays  
Liquid crystal displays  
Optical imaging sensors  
Solar cells  
(**light-emitting** materials based on  
bis(aminophenyl)anthracene derivs. for organic  
**electroluminescent devices** and the  
**electroluminescent devices** and devices  
using them)
- IT 194295-85-7 194295-89-1 194295-95-9 194296-08-7 194296-10-1  
194296-12-3 194296-14-5 194296-17-8 194296-19-0 194296-21-4  
194296-24-7 194296-26-9 194296-28-1 194296-30-5 194296-32-7  
194296-34-9 194296-36-1 194296-38-3 194296-40-7  
**194296-44-1** 194296-46-3 194296-48-5 194296-49-6  
194296-50-9 194296-51-0 194296-52-1 194296-53-2 194296-54-3  
194296-55-4 194296-56-5 194296-57-6 194296-58-7 194296-59-8  
194296-60-1 194296-61-2
- RL: DEV (Device component use); PRP (Properties); USES (Uses)

(~~light-emitting~~ materials based on  
bis(aminophenyl)anthracene derivs. for organic  
~~electroluminescent devices~~ and the  
~~electroluminescent devices~~ and devices  
using them)

IT 194295-92-6P 194295-98-2P 194296-03-2P 194296-06-5P  
194296-42-9P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)

(~~light-emitting~~ materials based on  
bis(aminophenyl)anthracene derivs. for organic  
~~electroluminescent devices~~ and the  
~~electroluminescent devices~~ and devices  
using them)

IT 103-32-2, N-Phenylbenzylamine 591-50-4, Iodobenzene 620-93-9,  
4,4'-Dimethyldiphenylamine 625-95-6, m-Iodotoluene 10081-67-1  
24672-72-8 106704-35-2, 9,10-Bis(4-aminophenyl)anthracene  
194296-62-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
(~~light-emitting~~ materials based on  
bis(aminophenyl)anthracene derivs. for organic  
~~electroluminescent devices~~ and the  
~~electroluminescent devices~~ and devices  
using them)

L31 ANSWER 55 OF 55 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1993:417620 HCAPLUS Full-text

DOCUMENT NUMBER: 119:17620

TITLE: Organic thin-film ~~electroluminescent~~  
elements

INVENTOR(S): Higashi, Hisahiro; Hosokawa, Chishio; Tokailin,  
Hiroshi

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 143 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9205131	A1	19920402	WO 1991-JP1228	199109 17
<--				
W: JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
EP 502202	A1	19920909	EP 1991-915989	199109 17
<--				
R: BE, CH, DE, FR, GB, IT, LI, NL, SE				
JP 3076603	B2	20000814	JP 1991-515014	199109 17
<--				
US 5366811	A	19941122	US 1992-856028	199205

04

PRIORITY APPLN. INFO.:

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JP 1990-248749 A 199009  
20  
--<  
JP 1990-279304 A 199010  
19  
--<  
WO 1991-JP1228 W 199109  
17  
--<

OTHER SOURCE(S): MARPAT 119:17620

AB The element comprises a phosphor consisting of a dimeric styryl derivative  
G(F)C:C(E)DQD'(E')C:C(F')G' (D,D' = (un)substituted C6-20 allylene, C3-20 divalent  
aromatic heterocyclic; E,E',F,F',G,G' = H, C6-20 aryl or cyclohexyl, C1-10 alkyl,  
C7-20 aralkyl, C1-10 alkoxy, (un)substituted C3-20 monovalent aromatic  
heterocyclic; F and G, or F' and G' are not H simultaneously; substituted groups =  
C1-6 alkyl, C1-6 alkoxy, C1-6 acyl, C7-8 aralkyl, C6-20 aryloxy, C2-7  
alkoxycarbonyl, C7-21 aryloxycarbonyl, C1-6 acyloxy, C1-6 acylamino, halo,  
carboxyl, aminocarbonyl, OH, CN, NO2, NH2; ≥1 substituent includes alkyl, alkoxy,  
aryloxy, NH2, (un)substituted phenyl; E and D, E' and D', F and G, or F' and G'  
may form (un)saturated 5- or 6-membered rings; Q = divalent group. The element,  
suited for use in a variety of **display** devices, is prepared by bonding 2 mols. of  
a compound having a good luminescence efficiency via the Q group without impairing  
the abilities of the compound, thereby improving thin-film characteristics.

IT 146823-28-1

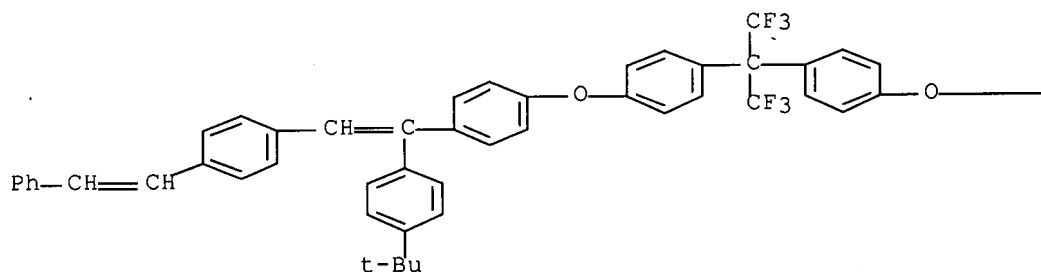
RL: PRP (Properties)

(electroluminescent phosphors, greenish-blue-emitting)

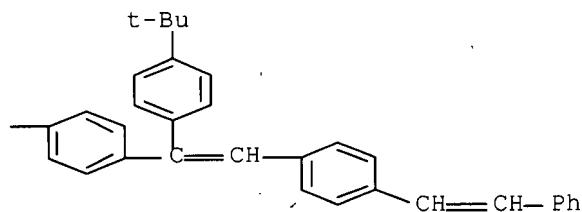
RN 146823-28-1 HCAPLUS

CN Benzene, 1,1'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[4-  
[4-[1-[4-(1,1-dimethylethyl)phenyl]-2-[4-(2-  
phenylethenyl)phenyl]ethenyl]phenoxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



- IC ICM C07C013-28  
 ICS C07C015-50; C07C001-32; C07C043-243; C07C041-01; C07C049-84;  
 C07C045-68; C07D209-86; C07D521-00; C09K011-06; C09B023-14;  
 H05B033-22
- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other  
 Related Properties)  
 Section cross-reference(s): 74
- ST **electroluminescent** phosphor dimeric styryl deriv film
- IT Phosphors  
 (blue-green-emitting, dimeric styryl derivs., for  
**electroluminescent devices**)
- IT 146823-22-5 146823-29-2  
 RL: PRP (Properties)  
 (**electroluminescent** phosphors from, blue-emitting)
- IT 146823-26-9  
 RL: PRP (Properties)  
 (**electroluminescent** phosphors, blue-green-emitting)
- IT 146823-23-6 146823-27-0 **146823-28-1**  
 RL: PRP (Properties)  
 (**electroluminescent** phosphors, greenish-blue-emitting)
- IT 2215-76-1P 2362-18-7P 3282-99-3P 10509-60-1P 17919-34-5P  
 56982-84-4P 126769-94-6P 146823-30-5P 146823-31-6P  
 146823-32-7P 146823-33-8P 146823-34-9P 146823-35-0P  
 146823-36-1P 146823-37-2P 146823-38-3P 146823-40-7P  
 146823-41-8P 146823-42-9P 146823-44-1P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation and reaction of, as intermediate of dimeric styryl  
 derivative, **electroluminescent** phosphors from)
- IT 137373-72-9P 146823-17-8P 146823-18-9P 146823-19-0P  
 146823-20-3P 146823-21-4P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and use of, as **electroluminescent** phosphor,  
 blue-emitting)
- IT 146823-39-4P 146823-43-0P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and use of, as **electroluminescent** phosphors)
- IT 146823-25-8P 146997-00-4P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and use of, as **electroluminescent** phosphors,  
 blue-emitting)
- IT 146997-02-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and use of, as **electroluminescent** phosphors,  
 green-emitting)
- IT 146997-01-5P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and use of, as **electroluminescent** phosphors,

greenish-blue-emitting)  
IT 146823-24-7P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and use of, as **electroluminescent** phosphors,  
purplish-blue-emitting)

=>

## Garrett, Dawn

---

**From:** Huang, Mei Q. (ASRC)  
**Sent:** Friday, August 31, 2007 3:51 PM  
**To:** Garrett, Dawn  
**Subject:** Search Result - 10/562,652 (Part II)

**Follow Up Flag:** Review  
**Flag Status:** Flagged

Examiner Garrett,

This is the second part of the answer - formulas 4-10. There are so many hits. I only displayed the first hit structure to save some display cost.

Please feel free to contact me if you have any questions or if you would like to refine the search query. Thank you for using STIC search services!

Regards,  
Mei

*Mei Huang*

Technical Information Specialist  
ASRC Management Services (USPTO)  
EIC 1700 - REM Bldg 4B31  
(571)-272-3952  
mei.huang@uspto.gov



Gar652A2.doc



search  
feedback form.doc

10/562,652

(II)  
formulas  
4-10

=> fil reg

FILE 'REGISTRY' ENTERED AT 14:51:53 ON 31 AUG 2007

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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 30 AUG 2007 HIGHEST RN 945894-95-1

DICTIONARY FILE UPDATES: 30 AUG 2007 HIGHEST RN 945894-95-1

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TSCA INFORMATION NOW CURRENT THROUGH June 29, 2007

Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d 123 que stat

L5 SCR 1839

L6 SCR 1174 OR 1357 OR 1404 OR 1781 OR 1782

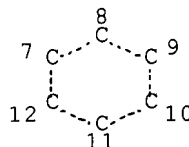
L10 STR

F @1

Ak≡N  
@2 3

SO2~Ak  
@4 5

G1 6



VAR G1=1/2/4

NODE ATTRIBUTES:

CONNECT IS X4 RC AT 2

CONNECT IS E1 RC AT 5

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 2

GGCAT IS SAT AT 5

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

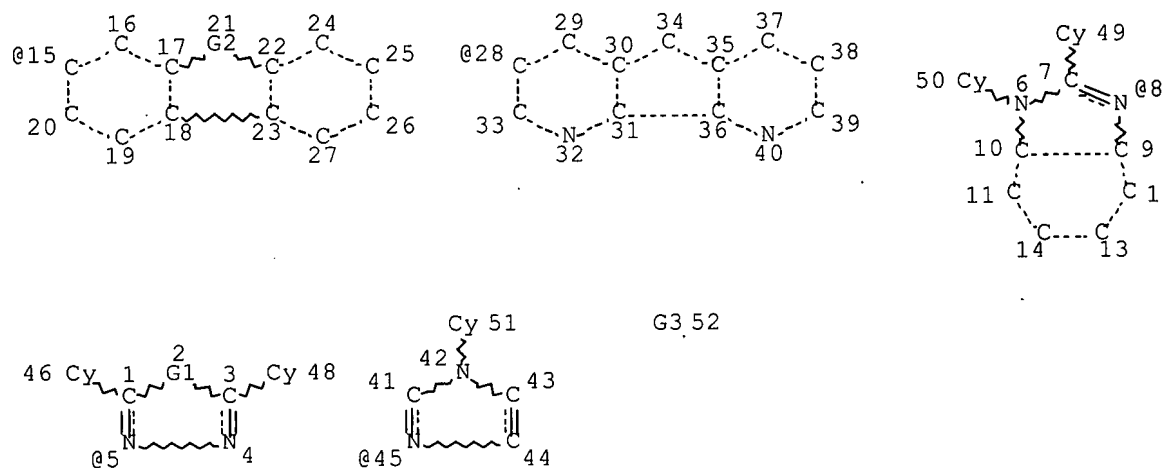
NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE

L18 SCR 2043 OR 1918 OR 2040 OR 2127 OR 2026 OR 2016 OR 1958

L21 STR





Page 1-A

2

Page 1-B

VAR G1=N/O

VAR G2=C/N

VAR G3=15/28/8/5/45

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 46

GGCAT IS UNS AT 48

GGCAT IS UNS AT 49

GGCAT IS UNS AT 50

GGCAT IS UNS AT 51

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 51

STEREO ATTRIBUTES: NONE

L23 20813 SEA FILE=REGISTRY SSS FUL L10 AND L21 AND L5 AND L6 NOT  
L18

100.0% PROCESSED 823230 ITERATIONS

20813 ANSWERS

SEARCH TIME: 00.00.10

=> d his nofile

(FILE 'HOME' ENTERED AT 13:42:37 ON 31 AUG 2007)

FILE 'LREGISTRY' ENTERED AT 13:42:54 ON 31 AUG 2007

L1 STR

L2 STR

L3 STR L2

FILE 'REGISTRY' ENTERED AT 14:02:22 ON 31 AUG 2007

L4 10 SEA SSS SAM L1 AND L3

L5 SCR 1839  
 L6 SCR 1174 OR 1357 OR 1404 OR 1781 OR 1782  
 L7 50 SEA SSS SAM L1 AND L3 AND L5 AND L6  
 L8 SCR 2043  
 L9 50 SEA SSS SAM L1 AND L3 AND L5 AND L6 NOT L8  
 L10 STR L1  
 L11 47 SEA SSS SAM L10 AND L3 AND L5 AND L6 NOT L8  
 L12 SCR 1840  
 L13 50 SEA SSS SAM L10 AND L3 AND L12 AND L6 NOT L8  
 L14 SCR 2043 OR 1918 OR 2040  
 L15 45 SEA SSS SAM L10 AND L3 AND L12 AND L6 NOT L14  
 L16 SCR 2043 OR 1918 OR 2040 OR 2127 OR 2026 OR 2016  
 L17 50 SEA SSS SAM L10 AND L3 AND L12 AND L6 NOT L16  
 L18 SCR 2043 OR 1918 OR 2040 OR 2127 OR 2026 OR 2016 OR 1958  
 L19 48 SEA SSS SAM L10 AND L3 AND L12 AND L6 NOT L18  
 L20 50 SEA SSS SAM L10 AND L3 AND L5 AND L6 NOT L18

FILE 'LREGISTRY' ENTERED AT 14:36:33 ON 31 AUG 2007

L21 STR L3

FILE 'REGISTRY' ENTERED AT 14:38:35 ON 31 AUG 2007

L22 50 SEA SSS SAM L10 AND L21 AND L5 AND L6 NOT L18  
 L23 20813 SEA SSS FUL L10 AND L21 AND L5 AND L6 NOT L18  
 SAV L23 TEMP GAR652A2/A

ACT GAR652AU/A

L24 15 SEA ABB=ON PLU=ON (372956-40-6/BI OR 817638-41-8/BI OR  
 817638-42-9/BI OR 817638-43-0/BI OR 817638-44-1/BI OR  
 817638-45-2/BI OR 817638-46-3/BI OR 817638-47-4/BI OR  
 817638-48-5/BI OR 817638-49-6/BI OR 817638-50-9/BI OR  
 817638-51-0/BI OR 817638-53-2/BI OR 817638-55-4/BI OR  
 817638-56-5/BI)

L25 7 SEA ABB=ON PLU=ON L23 AND L24  
 L26 8 SEA ABB=ON PLU=ON L24 NOT L25  
 D SCA

FILE 'HCAPLUS' ENTERED AT 14:41:25 ON 31 AUG 2007

L27 17 SEA ABB=ON PLU=ON L24  
 L28 6600 SEA ABB=ON PLU=ON L23  
 L29 QUE ABB=ON PLU=ON ELECTROLUM!N? OR ORGANOLUM!N?  
 L30 QUE ABB=ON PLU=ON ILLUMINAT?  
 L31 QUE ABB=ON PLU=ON (ELECTRO OR ORGANO OR ORG#) (2A) LUM!N?  
 OR LIGHT(2A) (EMISSION? OR EMIT?) OR EL OR E(W)L OR OLED  
 OR L(W)E(W)D  
 L32 16 SEA ABB=ON PLU=ON L27 AND (L29 OR L30 OR L31)  
 L33 354 SEA ABB=ON PLU=ON L28 AND (L29 OR L30 OR L31)  
 L34 QUE ABB=ON PLU=ON (L29 OR L30 OR L31) (3A) (DEVICE? OR  
 APPARAT? OR APP## OR ASSEMBLY OR ASSEMBLIES)  
 L35 297 SEA ABB=ON PLU=ON L33 AND L34  
 L36 1 SEA ABB=ON PLU=ON L25  
 D SCA  
 L37 QUE ABB=ON PLU=ON DISPLAY? OR MONITOR? OR SCREEN? OR  
 PANEL? OR FLATPANEL? OR FLAT(W)PANEL?  
 L38 64 SEA ABB=ON PLU=ON L35 AND L37  
 L39 52 SEA ABB=ON PLU=ON L38 AND (PY<=2004 OR PRY<=2004 OR  
 AY<=2004)  
 L40 52 SEA ABB=ON PLU=ON L36 OR L39

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 14:52:21 ON 31 AUG 2007

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FILE COVERS 1907 - 31 Aug 2007 VOL 147 ISS 11

FILE LAST UPDATED: 30 Aug 2007 (20070830/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d 140 ibib abs fhitr hitind 1-52

L40 ANSWER 1 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:471887 HCAPLUS Full-text

DOCUMENT NUMBER: 144:468643

TITLE: Multi-functional copolymers comprising rare earth metal complexes and devices thereof

INVENTOR(S): Ling, Qidan; Huang, Wei; Kang, En-Tang; Neoh, Koon Gee

PATENT ASSIGNEE(S): National University of Singapore, Singapore

SOURCE: PCT Int. Appl., 88 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
WO 2006052222	A2	20060518	WO 2005-SG384	20051110

<--

WO 2006052222 A3 20060831

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,

IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
 TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.:

US 2004-626895P

P

200411  
10

<--

US 2004-626982P

P

200411  
10

<--

OTHER SOURCE(S): MARPAT 144:468643

AB The invention relates to copolymer complexes of the formula  $-[Ax-[B(C)]y-DZ]n-$ : wherein  $[Ax-[B(C)]y-DZ]$  denotes a single unit of the copolymer complex that is repeated  $n$  times, wherein  $n$  is an integer greater than one, and wherein the single unit comprises a conjugated backbone coordinated to a complex (C) comprising rare earth metal(s);  $x$ ,  $y$ , and  $z$  are nos. greater than zero such that  $x = y + z$ ; A is independently selected from a group consisting of fluorene, carbazole, oxadiazole, triphenylamine, or derivs. thereof; B is a functional ligand selected from the group consisting of benzoic acid, 1,3-diphenylpropane-1,3-dione, 1,10-phenanthroline, 2,2-bipyridine, or derivs. thereof; and D is independently selected from a group consisting of fluorene, carbazole, oxadiazole, triphenylamine, or derivs. thereof.

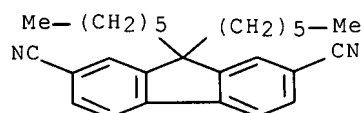
IT 536744-33-9P, 2,7-Dicyano-9,9-dihexylfluorene

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(production of multifunctional copolymers containing rare earth metal complexes for **light-emitting devices**)

RN 536744-33-9 HCAPLUS

CN 9H-Fluorene-2,7-dicarbonitrile, 9,9-dihexyl- (9CI) (CA INDEX NAME)



IC ICM C08G

CC 35-5 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 73, 74, 78

IT Polymers, preparation

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(conjugated; production of multifunctional copolymers containing rare earth metal complexes for **light-emitting devices**)

IT Electroluminescent devices

(production of multifunctional copolymers containing rare earth metal complexes for **light-emitting devices**)

IT Rare earth complexes

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(production of multifunctional copolymers containing rare earth metal complexes for **light-emitting devices**)

IT Liquid crystal **displays**

(production of multifunctional copolymers containing rare earth metal complexes for liquid crystal **displays**)

- IT 1802-30-8P, 5,5'-Dicarboxy-2,2'-bipyridine 5933-32-4P,  
p-Bromobenzoic acid hydrazide 6813-38-3P, 4,4'-Dicarboxy-2,2'-  
bipyridine 10042-88-3P, Terbium chloride 14552-07-9P,  
Tris(dibenzoylmethanato)europium 30276-26-7P, Terbium  
triisopropoxide 30276-28-9P, Europium triisopropoxide  
33170-68-2P, 1,3-Bis(4-bromophenyl)propane-1,3-dione 51329-15-8P,  
Methyl 3,5-dibromobenzoate 72460-28-7P, 2,2'-Bipyridine-4,4'-  
dicarbonyl chloride 82799-91-5P, 2,2'-Bipyridine-5,5'-dicarbonyl  
chloride 136630-39-2P, 2,7-Dibromocarbazole 173063-52-0P,  
3,6-Dibromo-9-(2-ethylhexyl)carbazole 181266-82-0P 188200-93-3P,  
2,7-Dibromo-9,9-di(2-ethylhexyl)fluorene 189367-54-2P,  
2,7-Dibromo-9,9-dihexylfluorene 203927-98-4P, 9,9-Dihexylfluorene-  
2,7-diboronic acid 250597-29-6P, 9,9-Dihexylfluorene-2,7-  
bis(trimethyleneboronate) 264615-47-6P, 9,9-Di(2-  
ethylhexyl)fluorene-2,7-diboronic acid 344782-49-6P,  
9,9-Di(2-ethylhexyl)fluorene-2,7-bis(trimethyleneboronate)  
367524-07-0P, 9,9-Di(2-ethylhexyl)fluorene 385767-22-6P,  
5,5'-Bis(2-(4-bromophenyl)-1,3,4-oxadiazoyl)-2,2'-bipyridine  
385767-23-7P, 4,4'-Bis(2-(4-bromophenyl)-1,3,4-oxadiazoyl)-2,2'-  
bipyridine 448955-87-1P, 3,6-Bis(4,4,5,5-tetramethyl-1,3,2-  
dioxaborolan-2-yl)-9-(2-ethylhexyl)carbazole **536744-33-9P**,  
2,7-Dicyano-9,9-dihexylfluorene 544436-46-6P, 2,7-Dibromo-9-(2-  
ethylhexyl)carbazole 886972-17-4P 886972-18-5P  
**886972-21-0P**, 3,6-Dicyano-9-(2-ethylhexyl)carbazole  
886972-22-1P, 9,9-Dihexylfluorene-2,7-ditetrazole 886988-10-9P,  
(1,3-Bis(4-bromophenyl)propane-1,3-dionato)bis(dibenzoylmethanato) (1,  
10-phenanthroline)europium 886988-11-0P, (1,3-Bis(4-  
bromophenyl)propane-1,3-dionato)bis(thenoyltrifluoroacetato) (1,10-  
phenanthroline)europium  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(production of multifunctional copolymers containing rare earth metal  
complexes for **light-emitting devices**)

- IT 66-71-7DP, 1,10-Phenanthroline, hydrolyzed, complexes with terbium  
triisopropoxide, acetyl acetone and poly[2,7-(9,9-dialkylfluorene)-  
co-5-carboxyphenylene-1,3-diyl] 120-46-7DP, Dibenzoylmethane,  
hydrolyzed, complexes with terbium triisopropoxide,  
1,10-phenanthroline and poly[2,7-(9,9-di(2-ethyl)hexylfluorene)-co-5-  
carboxyphenylene-1,3-diyl] 123-54-6DP, Acetyl acetone, hydrolyzed,  
complexes with terbium triisopropoxide, 1,10-phenanthroline and  
poly[2,7-(9,9-dihexylfluorene)-co-5-carboxyphenylene-1,3-diyl]  
326-91-0DP, Thenoyltrifluoroacetone, complexes with terbium  
triisopropoxide and 5,5'-bis(2-(4-bromophenyl)-1,3,4-oxadiazoyl)-  
2,2'-bipyridine-9,9-di(2-ethylhexyl)fluorene-2,7-  
bis(trimethyleneboronate) copolymer 14552-07-9DP,  
Tris(dibenzoylmethanato)europium(III), complexes with  
5,5'-bis(2-(4-bromophenyl)-1,3,4-oxadiazoyl)-2,2'-bipyridine-9,9-  
di(2-ethylhexyl)fluorene-2,7-bis(trimethyleneboronate) copolymer  
30276-26-7DP, Terbium triisopropoxide, hydrolyzed, complexes with  
1,10-phenanthroline and poly[2,7-(9,9-dialkylfluorene)-co-5-  
carboxyphenylene-1,3-diyl] 181266-82-0DP,  
Tris(acetylacetonato)europium hydrate, complexes with  
2,2'-bipyridine-5,5'-dicarbonyl chloride-9,9-dihexylfluorene-2,7-  
ditetrazole copolymer 608881-72-7DP, 2,7-Dibromo-9,9-  
dihexylfluorene-9,9-dihexylfluorene-2,7-bis(trimethyleneboronate)-  
methyl 3,5-dibromobenzoate copolymer, hydrolyzed, complexes with

terbium triisopropoxide, acetyl acetone and 1,10-phenanthroline  
 608881-72-7P, 2,7-Dibromo-9,9-dihexylfluorene-9,9-dihexylfluorene-  
 2,7-bis(trimethyleneboronate)-methyl 3,5-dibromobenzoate copolymer  
 886972-16-3DP, 2,7-Dibromo-9,9-di(2-ethylhexyl)fluorene-9,9-di(2-  
 ethylhexyl)fluorene-2,7-bis(trimethyleneboronate)-methyl  
 3,5-dibromobenzoate copolymer, hydrolyzed, complexes with  
 dibenzoylmethane, 1,10-phenanthroline and poly[2,7-(9,9-  
 dihexylfluorene)-co-5-carboxyphenylene-1,3-diyl] 886972-16-3P,  
 2,7-Dibromo-9,9-di(2-ethylhexyl)fluorene-9,9-di(2-  
 ethylhexyl)fluorene-2,7-bis(trimethyleneboronate)-methyl  
 3,5-dibromobenzoate copolymer 886972-19-6DP, 5,5'-Bis(2-(4-  
 bromophenyl)-1,3,4-oxadiazoyl)-2,2'-bipyridine-9,9-di(2-  
 ethylhexyl)fluorene-2,7-bis(trimethyleneboronate) copolymer,  
 complexes with terbium derivs. and thenoyltrifluoroacetone or  
 dibenzoylmethane 886972-19-6P, 5,5'-Bis(2-(4-bromophenyl)-1,3,4-  
 oxadiazoyl)-2,2'-bipyridine-9,9-di(2-ethylhexyl)fluorene-2,7-  
 bis(trimethyleneboronate) copolymer 886972-20-9DP,  
 5,5'-Bis(2-(4-bromophenyl)-1,3,4-oxadiazoyl)-2,2'-bipyridine-9,9-  
 di(2-ethylhexyl)fluorene-2,7-bis(trimethyleneboronate) copolymer,  
 SRU, complexes with terbium derivs. and thenoyltrifluoroacetone or  
 dibenzoylmethane 886972-20-9P, 5,5'-Bis(2-(4-bromophenyl)-1,3,4-  
 oxadiazoyl)-2,2'-bipyridine-9,9-di(2-ethylhexyl)fluorene-2,7-  
 bis(trimethyleneboronate) copolymer, SRU 886972-23-2DP,  
 2,2'-Bipyridine-5,5'-dicarbonyl chloride-9,9-dihexylfluorene-2,7-  
 ditetrazole copolymer, complexes with terbium derivs.  
 886972-23-2P, 2,2'-Bipyridine-5,5'-dicarbonyl chloride-9,9-  
 dihexylfluorene-2,7-ditetrazole copolymer 886972-24-3DP,  
 2,2'-Bipyridine-5,5'-dicarbonyl chloride-9,9-dihexylfluorene-2,7-  
 ditetrazole copolymer, SRU, complexes with terbium derivs.  
 886972-24-3P, 2,2'-Bipyridine-5,5'-dicarbonyl chloride-9,9-  
 dihexylfluorene-2,7-ditetrazole copolymer, SRU 886988-12-1P,  
 (1,3-Bis(4-bromophenyl)propane-1,3-dionato)bis(thenoyltrifluoroaceto  
 nato)(1,10-phenanthroline)europium-2,7-dibromo-9,9-dihexylfluorene-  
 9,9-dihexylfluorene-2,7-bis(trimethyleneboronate) copolymer  
 886988-13-2P

RL: IMF (Industrial manufacture); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)

(production of multifunctional copolymers containing rare earth metal  
 complexes for **light-emitting devices**

IT 66-71-7, 1,10-Phenanthroline 74-88-4, Iodomethane, reactions  
 99-90-1, 4'-Bromoacetophenone 111-25-1, 1-Bromohexane 120-46-7,  
 Dibenzoylmethane 302-01-2, Hydrazine, reactions 326-91-0,  
 Thenoyltrifluoroacetone 504-63-2, 1,3-Propanediol 544-92-3,  
 Copper monocyanide 618-58-6, 3,5-Dibromobenzoic acid 683-60-3,  
 Sodium isopropoxide 1134-35-6, 4,4'-Dimethyl-2,2'-bipyridine  
 1308-96-9, Europium oxide 1762-34-1, 5,5'-Dimethyl-2,2'-bipyridine  
 5798-75-4, Ethyl 4-bromobenzoate 6825-20-3, 3,6-Dibromocarbazole  
 7647-01-0, Hydrochloric acid, reactions 7719-09-7, Thionyl  
 chloride 7726-95-6, Bromine, reactions 10025-76-0, Europium(III)  
 chloride 12036-41-8, Terbium oxide 13675-18-8, Diboronic acid  
 16433-88-8, 2,7-Dibromofluorene 18908-66-2, 2-Ethylhexyl bromide  
 26628-22-8, Sodium azide 61676-62-8, 2-Isopropoxy-4,4,5,5-  
 tetramethyl-1,3,2-dioxaborolane

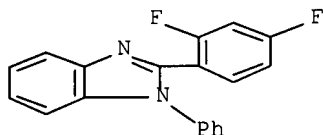
RL: RCT (Reactant); RACT (Reactant or reagent)

(production of multifunctional copolymers containing rare earth metal  
 complexes for **light-emitting devices**

ACCESSION NUMBER: 2006:340641 HCAPLUS Full-text  
 DOCUMENT NUMBER: 144:401280  
 TITLE: Organometallic compounds and **display**  
 device employing the same  
 INVENTOR(S): Lin, Cheng-Hung  
 PATENT ASSIGNEE(S): Au Optronics Corp., Taiwan  
 SOURCE: U.S. Pat. Appl. Publ., 10 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2006078758	A1	20060413	US 2005-45995	200501 28
TW 260339	B	20060821	TW 2004-93130362	200410 07
JP 2006117660	A	20060511	JP 2005-286102	200509 30
PRIORITY APPLN. INFO.:			TW 2004-93130362	A 200410 07

OTHER SOURCE(S): MARPAT 144:401280  
 AB The present invention relates to organometallic compds. and **display** devices employing the same. Organometallic compds. can serve as host materials for an organic **electroluminescent device**. Furthermore, the organometallic compds. can also serve as green phosphorescent dopant material for **display** devices, by a way of the specific chemical structure.  
 IT **852673-40-6P**  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation of organometallic compds. for **display** device)  
 RN 852673-40-6 HCAPLUS  
 CN 1H-Benzimidazole, 2-(2,4-difluorophenyl)-1-phenyl- (9CI) (CA INDEX NAME)



INCL 428690000; 428917000; 315504000; 313506000; 257-E51.044; 548101000;  
 548103000; 548108000; 548110000  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 ST organometallic compd **electroluminescent display**

## device

## IT Electroluminescent devices

(organometallic compds. and **display** device employing same)

## IT Phosphorescent substances

(organometallic compds. for **display** device)

## IT Organometallic compounds

RL: TEM (Technical or engineered material use); USES (Uses)  
(organometallic compds. for **display** device)

IT 98-88-4, Benzoyl chloride 288-13-1, Pyrazole 534-85-0,  
N-Phenyl-1,2-phenylenediamine 13569-57-8, Iridium trichloride  
trihydrate 14695-83-1, Sodium tetrakis(1-pyrazolyl)borate  
72482-64-5, 2,4-Difluoro-Benzoyl chloride

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of organometallic compds. for **display** device)

IT 2622-67-5P 807610-00-0P **852673-40-6P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)

(preparation of organometallic compds. for **display** device)

## IT 883114-77-0P 883114-79-2P 883114-81-6P

RL: SPN (Synthetic preparation); TEM (Technical or engineered  
material use); PREP (Preparation); USES (Uses)

(preparation of organometallic compds. for **display** device)

L40 ANSWER 3 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:164481 HCAPLUS Full-text

DOCUMENT NUMBER: 144:254591

TITLE: Oxime ester photoinitiators for polymerization

INVENTOR(S): Tanabe, Junichi; Kunitomo, Kazuhiko; Kura,  
Hisatoshi; Oka, Hidetaka; Ohwa, Masaki

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 72 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006018405	A1	20060223	WO 2005-EP53894	20050808

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,  
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,  
MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,  
SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

CA 2575046 A1 20060223 CA 2005-2575046

20050808



EP 1778636

A1

20070502

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EP 2005-779228200508  
08<--  
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK,  
TR

CN 101014569

A

20070808

CN 2005-80028269

200508  
08

PRIORITY APPLN. INFO.:

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EP 2004-103962

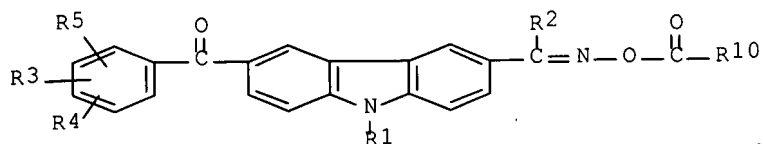
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200408  
18<--  
WO 2005-EP53894

W

200508  
08OTHER SOURCE(S):  
GI

MARPAT 144:254591



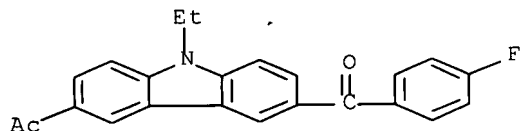
AB The oxime compds. comprise (I), wherein R1, R2 and R10 independently of one another are C1-20 alkyl, Ph, C1-12 alkylphenyl or phenyl-C1-6 alkyl; R3 and R4 independently of one another are hydrogen, C1-20 alkyl, NR6R7 or SR8, provided that at least one of R3 or R4 is NR5R6 or SR8; R5 is hydrogen or C1-20 alkyl; R6 and R7 independently of one another are C1-20 alkyl, or R6 and R7 together with the N-atom to which they are attached form a 5 or 6 membered ring, which optionally is interrupted by O, S or NR9 and which optionally addnl. is substituted by one or more C1-4 alkyl; R8 is Ph, biphenyl, naphthyl, anthryl or phenanthryl, all of which optionally are substituted by one or more C1-4alkyl; and R9 is hydrogen, C1-20 alkyl, C2-4 hydroxyalkyl or phenyl;. The compds. exhibit an unexpectedly good performance in photopolymerization reactions.

IT 876907-97-0P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(oxime ester photoinitiators for polymerization)

RN 876907-97-0 HCAPLUS

CN Ethanone, 1-[9-ethyl-6-(4-fluorobenzoyl)-9H-carbazol-3-yl]- (CA  
INDEX NAME)



IC ICM C07D209-86  
ICS G03F007-004  
CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 67  
IT **Electroluminescent devices**  
(**displays**; oxime ester photoinitiators for polymerization)  
IT Luminescent **screens**  
(**electroluminescent**; oxime ester photoinitiators for  
polymerization)  
IT Adhesives  
Dental materials and appliances  
Encapsulants  
Liquid crystal **displays**  
Micromachines  
Optical filters  
Optical switches  
Paints  
Photoresists  
Printing plates  
Varnishes  
Waveguides  
(oxime ester photoinitiators for polymerization)  
IT **876907-97-0P** 876907-98-1P 876907-99-2P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(oxime ester photoinitiators for polymerization)  
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN  
THE RE FORMAT

L40 ANSWER 4 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2005:1077993 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:376607  
TITLE: Fluorene-based compound and organic  
**electroluminescent display**  
**device** using the same  
INVENTOR(S): Hwang, Seok-Hwan; Lee, Seok-Jong; Kim,  
Young-Kook; Yang, Seung-Gak; Kim, Hee-Yeon  
PATENT ASSIGNEE(S): S. Korea  
SOURCE: U.S. Pat. Appl. Publ., 31 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005221124	A1	20051006	US 2005-97182	200504 04
			<--	
KR 2005097670	A	20051010	KR 2004-22877	200404 02
			<--	
JP 2005290000	A	20051020	JP 2005-106551	

200504

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CN 1702065

A

20051130

CN 2005-10069765

200504

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PRIORITY APPLN. INFO.:

KR 2004-22877

A

200404

02

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OTHER SOURCE(S):

MARPAT 143:376607

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB A fluorene-based compound represented by the general formula I where Z is represented by the general formula II, III, and IV, where Ar is a substituted or unsubstituted aryl group or a group by the general formula V (X = N, B or P; Y = a single bond, a (un)substituted C1-C30 alkylene group, a (un)substituted C6-C30 arylene group, a (un)substituted C4-C30 heterocyclic group; R1, R2, R3 = H, (un)substituted C1-C30 alkyl group, a (un)substituted C6-C30 aryl group, a (un)substituted C4-C30 heterocyclic group, a (un)substituted C6-C30 condensed polycyclic group, where neighboring groups among R1, R2 and R3 are connected to each other to form a (un)saturated carbon ring; R', R'' = H, a hydroxy group, a (un)substituted C1-C30 alkyl group, a (un)substituted C6-C30 aryl group) is described. An organic **electroluminescent display device** comprising two electrodes; and an organic layer interposed between the electrodes, wherein the organic layer comprises the fluorene-based compound is also described.

IT 866119-49-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

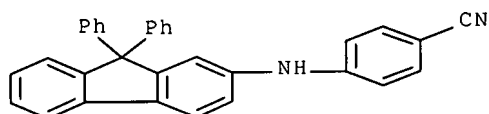
(Preparation); RACT (Reactant or reagent)

(fluorene-based compound and organic **electroluminescent display device** using the same)

RN 866119-49-5 HCAPLUS

CN Benzonitrile, 4-[(9,9-diphenyl-9H-fluoren-2-yl)amino]- (9CI) (CA

INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; C07D209-82; C07F005-02; C07F009-02

INCL 428690000; 428917000; 313504000; 313506000; 548440000; 548442000; 564427000; 568001000; 568017000

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 22, 73, 76

ST fluorene org compd **electroluminescent display device**IT **Electroluminescent devices**

(displays; fluorene-based compound and organic

electroluminescent display device  
using the same)

IT Luminescent **screens**  
Luminescent substances  
(electroluminescent; fluorene-based compound and organic  
electroluminescent display device  
using the same)

IT 2085-33-8, Alq3  
RL: DEV (Device component use); USES (Uses)  
(electron transport layer; fluorene-based compound and organic  
electroluminescent display device  
using the same)

IT 50926-11-9, Indium tin oxide  
RL: DEV (Device component use); USES (Uses)  
(fluorene-based compound and organic electroluminescent  
display device using the same)

IT 1150-62-5P 3096-56-8P 400607-31-0P 474918-32-6P 502161-03-7P  
736928-22-6P 736928-23-7P **866119-49-5P**  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(fluorene-based compound and organic electroluminescent  
display device using the same)

IT 866119-12-2P 866119-13-3P 866119-14-4P **866119-15-5P**  
866119-16-6P 866119-17-7P 866119-18-8P 866119-19-9P  
866119-20-2P 866119-21-3P **866119-22-4P** 866119-23-5P  
866119-24-6P **866119-25-7P** 866119-26-8P 866119-27-9P  
866119-28-0P 866119-29-1P **866119-30-4P** 866119-31-5P  
**866119-32-6P** 866119-33-7P 866119-34-8P 866119-35-9P  
**866119-36-0P 866119-37-1P 866119-38-2P**  
**866119-39-3P** 866119-40-6P 866119-41-7P 866119-42-8P  
866119-43-9P 866119-44-0P 866119-45-1P 866119-46-2P  
**866119-47-3P** 866119-48-4P  
RL: IMF (Industrial manufacture); TEM (Technical or engineered  
material use); PREP (Preparation); USES (Uses)  
(fluorene-based compound and organic electroluminescent  
display device using the same)

IT 71-43-2, Benzene, reactions 86-74-8, 9H-Carbazole 108-86-1,  
reactions 873-74-5 1133-80-8  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(fluorene-based compound and organic electroluminescent  
display device using the same)

IT 94928-86-6  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(green phosphor dopant; fluorene-based compound and organic  
electroluminescent display device  
using the same)

IT 123847-85-8, NPB 627090-84-0, IDE 406  
RL: DEV (Device component use); USES (Uses)  
(hole injection layer; fluorene-based compound and organic  
electroluminescent display device  
using the same)

IT 58328-31-7, CBP  
RL: DEV (Device component use); USES (Uses)  
(phosphor host; fluorene-based compound and organic  
electroluminescent display device  
using the same)

IT 866186-51-8, RD 61  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)

(red phosphor; fluorene-based compound and organic  
electroluminescent display device  
using the same)

L40 ANSWER 5 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2005:904198 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:238652  
TITLE: Charge transport compounds and electronic  
devices made with such compounds  
INVENTOR(S): Herron, Norman; Hoyt, Brian D.; Radu, Nora  
Sabina; Smith, Eric Maurice  
PATENT ASSIGNEE(S): E. I. Du Pont De Nemours and Company, USA  
SOURCE: U.S. Pat. Appl. Publ., 9 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005186495	A1	20050825	US 2004-783132	200402 20
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US 7011871	B2	20060314		
WO 2005082851	A2	20050909	WO 2005-US5583	200502 17

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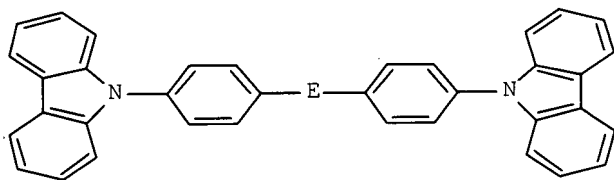
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CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US,  
UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,  
NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2004-783132 A  
200402  
20

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OTHER SOURCE(S): MARPAT 143:238652  
GI



I

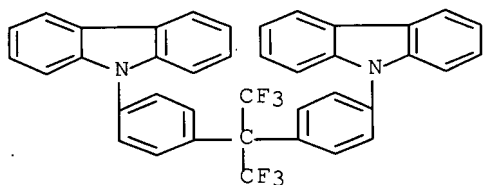
AB The present invention relates to novel compds. represented by I [E = O, S, (SiR<sub>1</sub>R<sub>2</sub>)<sub>m</sub>; m = 1-20] useful as electronic hole transport materials, and to compns. and electronic devices comprising at least one layer containing the compns. 3 Compds. were synthesized.

IT 697312-14-4P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(preparation of charge transport compds. suitable for electronic devices)

RN 697312-14-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]d i-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM G03G005-06

INCL 430079000; X54-844.4; X54-844.0; X13-626.3

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73, 76

ST charge transport compd electronic **device** hole org  
**electroluminescent display**

IT **Electroluminescent devices**

(**displays**; charge transport compds. and electronic devices made with such compds.)

IT Luminescent **screens**

(**electroluminescent**; charge transport compds. and electronic devices made with such compds.)

IT 697312-14-4P 750573-34-3P 862896-05-7P

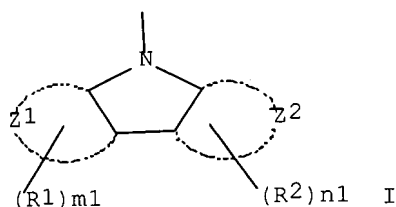
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(preparation of charge transport compds. suitable for electronic devices)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

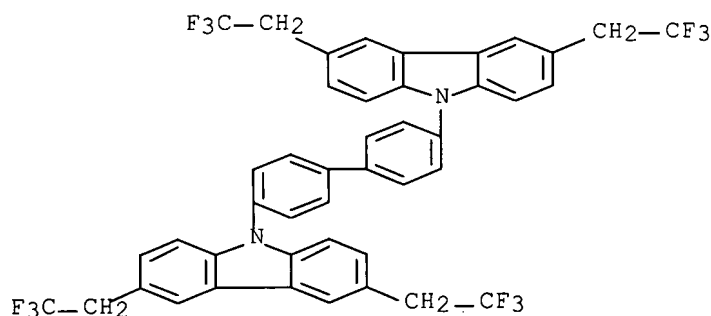
ACCESSION NUMBER: 2005:591723 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:122842  
 TITLE: Organic **electroluminescent device** for optical **display** and lighting apparatus  
 INVENTOR(S): Oshiyama, Tomohiro; Kato, Eisaku; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 53 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2005183345	A	20050707	JP 2003-426570	200312 24
			<--	
PRIORITY APPLN. INFO.:			JP 2003-426570	200312 24
			<--	

GI



AB Disclosed is an organic **electroluminescent device** comprising a compound containing the partial structure represented by I [Z1 and Z2 = atoms for forming aromatic hydrocarbon or heterocyclic ring; R1 and R2 = -L1-R3 [L1 =alkylene, O and S; and R3 = substituted group with Hammett's  $\sigma_p$  in 0.01-0.80] and -Arl-R4 [Arl = arylene and divalent aromatic heterocyclic group; and R4 = substituted group with Hammett's  $\sigma_p$  in 0.08-0.80]; m1 and n1 = 0-4 integers, and  $1 \leq m1 + n1 \leq 8$ ].  
 IT 857090-47-2  
 RL: DEV (Device component use); USES (Uses)  
 (host material; organic **electroluminescent device**  
 for optical **display** and lighting apparatus)  
 RN 857090-47-2 HCAPLUS  
 CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis[3,6-bis(2,2,2-trifluoroethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C07D209-86; C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74

ST org **electroluminescent device** optical  
**display** lighting app

IT **Electroluminescent devices**  
Light sources  
Optical imaging **devices**  
Phosphorescent substances  
(organic **electroluminescent device** for optical **display** and lighting apparatus)

IT 857090-47-2 857090-48-3 857090-49-4  
857090-50-7 857090-51-8 857090-52-9  
857090-53-0 857090-54-1 857090-55-2  
857090-56-3 857090-57-4 857090-58-5 857090-59-6  
857090-60-9 857090-61-0 857090-62-1 857090-63-2  
857090-64-3 857090-65-4 857090-66-5  
857090-67-6 857090-68-7 857090-69-8  
RL: DEV (Device component use); USES (Uses)  
(host material; organic **electroluminescent device** for optical **display** and lighting apparatus)

IT 76-05-1, Trifluoroacetic acid, reactions 3001-15-8,  
4,4'-Diiodobiphenyl 6825-20-3, 3,6-Dibromocarbazole  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic **electroluminescent device** for optical **display** and lighting apparatus)

IT 857090-70-1P 857090-71-2P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)  
(organic **electroluminescent device** for optical **display** and lighting apparatus)

IT 94928-86-6 376367-93-0  
RL: DEV (Device component use); USES (Uses)  
(phosphorescent guest material; organic **electroluminescent device** for optical **display** and lighting apparatus)

L40 ANSWER 7 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2005:336361 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:336166  
TITLE: Novel fluorene-based blue emitters for high performance **OLEDs**  
AUTHOR(S): Saitoh, Akihito; Yamada, Naoki; Yashima, Masataka; Okinaka, Keiji; Senoo, Akihiro; Ueno, Kazunori; Tanaka, Daisaku; Yashiro, Ryoji



CORPORATE SOURCE: Advanced Device Technology Development Center,  
Canon Inc., Ohta-ku, Tokyo, Japan  
SOURCE: Digest of Technical Papers - Society for  
Information Display International Symposium (  
2004), 35, 150-153  
CODEN: DTPSDS  
PUBLISHER: Society for Information Display  
DOCUMENT TYPE: Journal; (computer optical disk)  
LANGUAGE: English

AB High performance new blue-emitting host-dopant systems, which consist of pyrene-substituted fluorene hosts such as DPYFL01 and diarylamino-substituted oligo(fluorenylene)s represented by BDT3FL as dopants, have been developed. The new host material, DPYFL01 showed high electron-mobility with  $1 \times 10^{-3}$  cm<sup>2</sup>/Vs. A device using DPYFL01 demonstrated blue emission (CIE: x, y = 0.15-0.16, 0.20-0.21) with high power efficiency of 4.5 lm/W at 200 cd/m<sup>2</sup>. The use of 20% BDT3FL in DPYFL01 resulted in deep-blue emission (CIE: 0.15, 0.15) while keeping high power efficiency of 4.6 lm/W at 3.1 V. The device-structure optimization together with the use of an addnl. host, C-H01 afforded deep-blue emission (CIE: 0.15, 0.14) and higher power efficiency of 4.9 lm/W and external quantum efficiency of 3.9 % at 4.3 mA/cm<sup>2</sup> with 200 cd/m<sup>2</sup>. Lifetime of the optimized device using 10 % BDT3FL was estimated to be over 10,000 h at an initial luminance of 200 cd/m<sup>2</sup>.

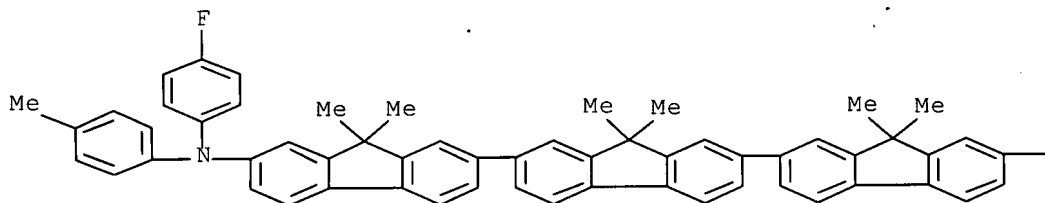
IT 865202-58-0

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(fluorene-based blue emitters for high performance **oleds**)

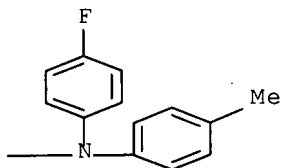
RN 865202-58-0 HCAPLUS

CN [2,2':7',2''-Ter-9H-fluorene]-7,7''-diamine, N,N'-bis(4-fluorophenyl)-9,9,9',9',9'',9''-hexamethyl-N,N'-(4-methylphenyl)-(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
ST fluorene deriv blue emitter **electroluminescent**  
**display**  
IT **Electroluminescent devices**  
(displays; fluorene-based blue emitters for high

performance oleds)  
 IT Luminescent screens  
   (electroluminescent; fluorene-based blue emitters for  
   high performance oleds)  
 IT Electron mobility  
   Emissivity  
   Phosphorescence  
     (fluorene-based blue emitters for high performance oleds  
     )  
 IT 607739-80-0 607739-84-4 669016-16-4 669016-17-5 865202-56-8  
   865202-57-9 865202-58-0 865202-59-1  
   RL: DEV (Device component use); PRP (Properties); USES (Uses)  
     (fluorene-based blue emitters for high performance oleds  
     )  
 REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR  
   THIS RECORD. ALL CITATIONS AVAILABLE IN  
   THE RE FORMAT

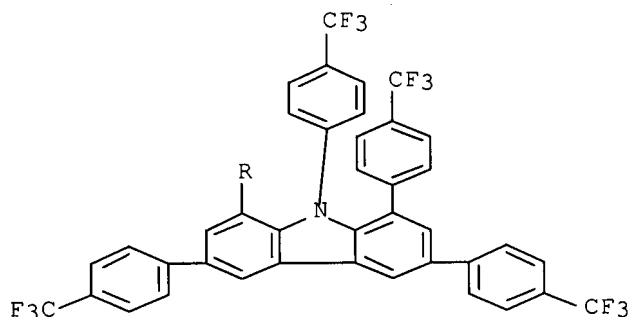
L40 ANSWER 8 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:302625 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:363935  
 TITLE: Blue-emitting organic  
   **electroluminescence** elements with high  
   brightness and long emission life, and  
   **displays** and electric lights using them  
 INVENTOR(S): Oshiyama, Tomohiro; Kato, Eisaku; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 38 pp.  
   CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005093159	A	20050407	JP 2003-322749	200309 16

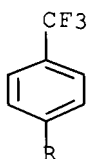
PRIORITY APPLN. INFO.: JP 2003-322749  
 200309  
 16

OTHER SOURCE(S): MARPAT 142:363935  
 AB The **electroluminescence** (EL) elements have luminescent layers containing host  
   compds. and phosphorescence compds., wherein any layers consisting the elements  
   contain Ar<sub>m</sub>(Ar<sub>1</sub>)(Ar<sub>2</sub>)(Ar<sub>3</sub>)(Ar<sub>4</sub>)(Ar<sub>5</sub>) [Ar = 5-membered aromatic ring containing ≥1  
   N (e.g., carbazole, pyrrole); Ar<sub>1-5</sub> = aryl, heteroaryl; m ≥0; R = H, substituent].  
 IT 849071-30-3  
   RL: DEV (Device component use); USES (Uses)  
     (blue-emitting organic **EL devices** with high  
     brightness and long emission life using phosphorescent materials)  
 RN 849071-30-3 HCAPLUS  
 CN 9H-Carbazole, 1,3,6,8,9-pentakis[4-(trifluoromethyl)phenyl]- (9CI)  
   (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM H05B033-14  
ICS C09K011-06; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73, 76

ST blue **electroluminescence device** host carbazole  
brightness; org **EL** white pyrrole host phosphorescence

IT Electric lamps  
Phosphorescent substances  
(blue-emitting organic **EL devices** with high brightness and long emission life using phosphorescent materials)

IT **Electroluminescent devices**  
(blue-emitting; blue-emitting organic **EL devices** with high brightness and long emission life using phosphorescent materials)

IT **Electroluminescent devices**  
(**displays**; blue-emitting organic **EL devices** with high brightness and long emission life using phosphorescent materials)

IT Luminescent **screens**  
Phosphors  
(**electroluminescent**; blue-emitting organic **EL devices** with high brightness and long emission life using phosphorescent materials)

IT 849071-27-8 849071-29-0 **849071-30-3 849071-31-4**  
849071-32-5 849071-33-6 849071-34-7 **849071-35-8**  
849071-36-9 849071-37-0 849071-38-1  
RL: DEV (Device component use); USES (Uses)  
(blue-emitting organic **EL devices** with high brightness and long emission life using phosphorescent materials)

IT 849071-28-9P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
(blue-emitting organic **EL devices** with high brightness and long emission life using phosphorescent materials)

IT 55119-09-0P, 1,3,6,8-Tetrabromocarbazole 849071-39-2P  
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (blue-emitting organic **EL devices** with high  
 brightness and long emission life using phosphorescent materials)

IT 86-74-8, Carbazole 98-80-6, Phenylboric acid 591-50-4,  
 Iodobenzene  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (blue-emitting organic **EL devices** with high  
 brightness and long emission life using phosphorescent materials)

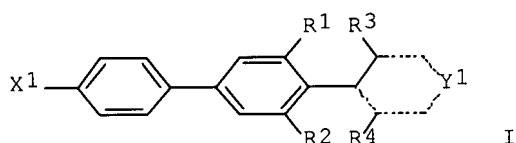
IT 94928-86-6 344796-24-3 376367-93-0  
 RL: DEV (Device component use); USES (Uses)  
 (phosphorescent substance; blue-emitting organic **EL  
 devices** with high brightness and long emission life using  
 phosphorescent materials)

L40 ANSWER 9 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:281222 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:363435  
 TITLE: Organic **electroluminescent  
 devices** containing specific biphenyl  
 compounds and LCD therewith  
 INVENTOR(S): Fukuda, Mitsuhiro; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 50 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005085658	A	20050331	JP 2003-317930	200309 10

PRIORITY APPLN. INFO.: <-- JP 2003-317930  
 200309  
 10

OTHER SOURCE(S): MARPAT 142:363435  
 GI



AB The devices contain, in one or more of organic compound layers, compds. I [X1 = Q1 or Q2 [Z1, Z2 = C: or C(R7): (R7 = H, substituent); R5, R6 = H, substituent; Ar1, Ar2 = aromatic group]; Y1 = 6-membered aromatic ring substituted with X1; R1-R4 = H, substituent (R1 = R2 = R3 = R4 ≠ H)], X2-p-C6H4-m-C6H4L2X'2 (X2, X'2 = the same

as X1; L2 = heterocycle, O-containing bivalent linking group), and/or X3-p-C6H4-C6H4L3CR8R9L'3X'3 [X3, X'3 = the same as X1; L3 = single bond, O, alkylene; R8, R9 = substituent including (fluoro)hydrocarbyl as the one or both; L'3 = single bond or bivalent linking group]. The compds. may work as hole-transporting host of phosphorescent substances in the layers.

IT 848836-86-2

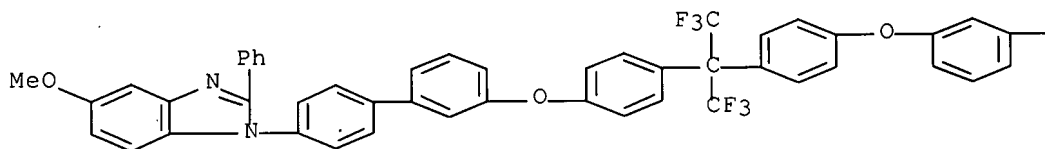
RL: DEV (Device component use); USES (Uses)

(emitting layers; long-life organic LED containing sp. biphenyl compds. and showing high luminescent efficiency for LCD)

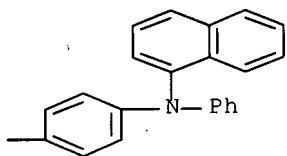
RN 848836-86-2 HCAPLUS

CN 1-Naphthalenamine, N-phenyl-N-[3'-[4-[2,2,2-trifluoro-1-[4-[[4'-(5-methoxy-2-phenyl-1H-benzimidazol-1-yl)[1,1'-biphenyl]-3-yl]oxy]phenyl]-1-(trifluoromethyl)ethyl]phenoxy][1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM H05B033-14

ICS C09K011-06; G02F001-1335; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST LCD backlight **org** LED **luminescent** efficiency; biphenyl compd **electroluminescent device**

durability LCD backlight; hole transporting phosphorescent host **electroluminescent** efficiency

IT Liquid crystal **displays**

Phosphorescent substances

(long-life organic LED containing sp. biphenyl compds. and showing high luminescent efficiency for LCD)

IT **Electroluminescent devices**

(organic; long-life organic LED containing sp. biphenyl compds. and showing high luminescent efficiency for LCD)

IT 58328-31-7, CBP 848836-80-6 848836-81-7 848836-82-8

848836-83-9 848836-84-0 848836-85-1 **848836-86-2**

848836-87-3 848836-88-4 848836-90-8 848836-91-9

**848836-92-0** 848836-95-3

RL: DEV (Device component use); USES (Uses)  
 (emitting layers; long-life organic LED containing sp. biphenyl compds.  
 and showing high luminescent efficiency for LCD)

L40 ANSWER 10 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:281206 HCAPLUS Full-text

DOCUMENT NUMBER: 142:344877

TITLE: Organic **electroluminescent** (EL)  
 ) **devices** with high brightness,  
 emission efficiency, and heat resistance  
 INVENTOR(S): Maki, Shinichiro; Tanaka, Hiroaki; Kaneko,  
 Tetsuya; Onikubo, Shunichi

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 29 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005085599	A	20050331	JP 2003-316326	200309 09

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PRIORITY APPLN. INFO.:

JP 2003-316326

200309  
09

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OTHER SOURCE(S): MARPAT 142:344877

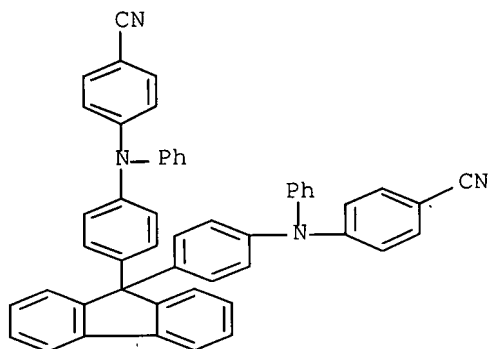
AB The devices, useful for **displays** in automobiles, have phosphor-containing **light-emitting** layers (A) or plural organic thin film layers including A, wherein the organic layers contain (un)substituted 9-R1-9-R2-fluorene [R1, R2 = (un)substituted Ph] in A or in hole-injecting and/or hole-transporting layers.

IT 848679-60-7

RL: TEM (Technical or engineered material use); USES (Uses)  
 (hole-injecting or hole-transporting layer; organic **EL**  
**devices** containing diphenylfluorene derivs. with high  
 brightness, emission efficiency, and heat resistance)

RN 848679-60-7 HCAPLUS

CN Benzonitrile, 4,4'-[9H-fluoren-9-ylidenebis[4,1-  
 phenylene(phenylimino)]]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-22  
ICS C09K011-06; H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent device** phenylfluorene hole transporter durability; heat resistance **EL** hole injection fluorene

IT **Electroluminescent devices**  
(organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 147-14-8, Copper phthalocyanine 123847-85-8  
RL: TEM (Technical or engineered material use); USES (Uses)  
(hole-injecting layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 159526-57-5 166444-94-6 166444-95-7 166444-97-9 166444-98-0  
174141-92-5 174141-94-7 213968-66-2 268730-91-2  
**848679-60-7** 848679-61-8 848679-69-6 848679-70-9  
848679-71-0  
RL: TEM (Technical or engineered material use); USES (Uses)  
(hole-injecting or hole-transporting layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 53812-81-0 848679-58-3 848679-59-4 848679-62-9 848679-63-0  
848679-64-1 848679-65-2 848679-66-3 848679-67-4 848679-68-5  
RL: TEM (Technical or engineered material use); USES (Uses)  
(hole-injecting, hole-transporting, or **light-emitting** layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 58328-31-7 848679-72-1 848679-73-2 848679-74-3 848679-75-4  
RL: TEM (Technical or engineered material use); USES (Uses)  
(host, **light-emitting** layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 94928-86-6  
RL: TEM (Technical or engineered material use); USES (Uses)  
(phosphor, **light-emitting** layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

L40 ANSWER 11 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:140278 HCAPLUS Full-text

DOCUMENT NUMBER: 142:229127

TITLE: Organic **electroluminescent** elements with low emission voltage and power consumption and lighting apparatus and **displays** using them

INVENTOR(S): Kato, Eisaku; Oshiyama, Tomohiro; Suzurizato, Yoshiyuki; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 38 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005044790	A	20050217	JP 2004-195396	20040701

PRIORITY APPLN. INFO.:

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JP 2003-193521      A

20030708

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OTHER SOURCE(S):      MARPAT 142:229127

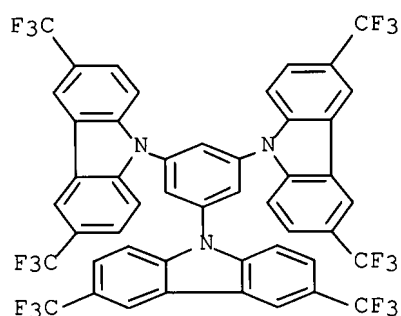
AB The elements, useful for blue- or white-emitting backlights for LCD, have layers containing compds. L1Xn [L1 = polyvalent hydrocarbon or aromatic linking group; X = (un)substituted N-containing aromatic heterocyclic group linked to L1 at N; n ≥ 2] adjacent to **light-emitting** layers between anodes and cathodes. The layers show good hole-barrier properties.

IT **844510-62-9**

RL: DEV (Device component use); USES (Uses)  
 (hole-barrier layer; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

RN 844510-62-9 HCAPLUS

CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[3,6-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73

ST LCD backlight blue emitting org **EL**;  
**electroluminescent device** hole barrier adjacent layer; **EL display** low light emission voltage

IT **Electroluminescent devices**

(blue-emitting; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT **Electroluminescent devices**

(**displays**; organic **EL** elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT **Luminescent screens**



(electroluminescent; organic EL elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT Light sources  
(for LCD; organic EL elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT Liquid crystal **displays**  
(organic EL elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT Electroluminescent devices  
(white-emitting; organic EL elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT 844510-61-8 844510-62-9 844510-64-1 844510-65-2  
844510-66-3 844510-68-5 844510-70-9  
844510-71-0 844510-72-1 844510-73-2  
844510-74-3 844510-75-4 844510-76-5

RL: DEV (Device component use); USES (Uses)  
(hole-barrier layer; organic EL elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

IT 376367-93-0  
RL: DEV (Device component use); USES (Uses)  
(phosphor, **light-emitting** layer; organic EL elements containing N-containing heterocyclic compds. in hole-barrier layers for **displays** with low emission voltage and power consumption)

L40 ANSWER 12 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:138480 HCAPLUS Full-text

DOCUMENT NUMBER: 142:249440

TITLE: Organic **electroluminescent** elements  
with improved brightness, emission efficiency,  
and durability and lighting apparatus and  
**displays** using them

INVENTOR(S): Oshiyama, Tomohiro; Kato, Eisaku; Suzurizato,  
Yoshiyuki; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 57 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005044791	A	20050217	JP 2004-195397	200407 01
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PRIORITY APPLN. INFO.:			JP 2003-193520	A 200307 08
			<--	

OTHER SOURCE(S): MARPAT 142:249440

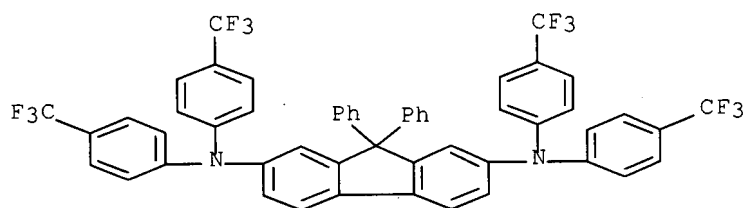
AB The elements, useful for blue- or white-emitting backlights for LCD, have layers containing triarylamine derivs. bearing electron-withdrawing groups adjacent to **light-emitting** layers between anodes and cathodes. The layers show good hole-barrier properties.

IT 844665-55-0

RL: DEV (Device component use); USES (Uses)  
(hole-barrier layer; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

RN 844665-55-0 HCAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-diphenyl-N,N,N',N'-tetrakis[4-(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS C07C211-56; C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST LCD backlight blue org **EL** brightness;  
**electroluminescent device** allylamine hole barrier durability; **EL display** triallylamine light emission efficiency

IT **Electroluminescent devices**

(blue-emitting; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT **Electroluminescent devices**

(**displays**; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT **Luminescent screens**

(**electroluminescent**; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT Light sources

(for LCD; organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT Liquid crystal **displays**

(organic **EL** elements containing electron-withdrawing triarylamine in hole-barrier layers for **displays** with good brightness, emission efficiency, and durability)

IT **Electroluminescent devices**

(white-emitting; organic **EL** elements containing

electron-withdrawing triarylamines in hole-barrier layers for  
**displays** with good brightness, emission efficiency, and  
durability)

IT 1821-41-6 152842-19-8 817638-43-0 817638-44-1 817638-51-0  
844665-51-6 844665-52-7 844665-53-8 844665-54-9  
**844665-55-0** 844665-56-1 844665-57-2 844665-58-3  
844665-59-4

RL: DEV (Device component use); USES (Uses)  
(hole-barrier layer; organic **EL** elements containing  
electron-withdrawing triarylamines in hole-barrier layers for  
**displays** with good brightness, emission efficiency, and  
durability)

IT 94928-86-6 343978-79-0 376367-93-0

RL: DEV (Device component use); USES (Uses)  
(phosphor, **light-emitting** layer; organic  
**EL** elements containing electron-withdrawing triarylamines in  
hole-barrier layers for **displays** with good brightness,  
emission efficiency, and durability)

L40 ANSWER 13 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:35085 HCAPLUS Full-text

DOCUMENT NUMBER: 142:102910

TITLE: Organic **electroluminescent**  
**device, illuminating**  
**device, and display**

INVENTOR(S): Oshiyama, Tomohiro; Kita, Hiroshi; Katoh, Eisaku

PATENT ASSIGNEE(S): Konica Minolta Holding, Inc., Japan

SOURCE: PCT Int. Appl., 80 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2005004549	A1	20050113	WO 2004-JP9391	200406 25

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL,  
PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG

EP 1651013 A1 20060426 EP 2004-746860

200406  
25

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
PL, SK, HR

CN 1817066 A 20060809 CN 2004-80019019 200406  
25  
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US 2007099025 A1 20070503 US 2005-562652 200512  
27  
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PRIORITY APPLN. INFO.: JP 2003-193519 A 200307  
08  
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WO 2004-JP9391 W 200406  
25  
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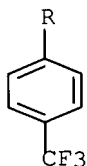
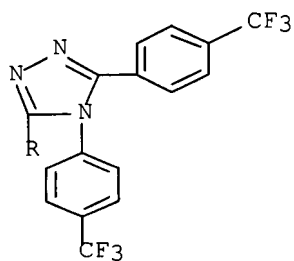
AB An organic **electroluminescent device** comprising at least a **light-emitting** layer containing a phosphorescent compound between an anode and a cathode is characterized by comprising an adjoining layer so arranged between the **light-emitting** layer and the cathode as to be adjacent to the **light-emitting** layer and containing a compound with an electron-withdrawing group having an HOMO at -5.7 eV to -7.0 eV and an LUMO at -1.3 eV to -2.3 eV.

IT 817638-46-3

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device**,  
**illumination apparatus** and **display**)

RN 817638-46-3 HCAPLUS

CN 4H-1,2,4-Triazole, 3,4,5-tris[4-(trifluoromethyl)phenyl]- (9CI) (CA  
INDEX NAME)



IC ICM H05B033-22  
ICS H05B033-14; G02F001-1335  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 74  
ST org **electroluminescent device display**  
**illumination app**  
IT Light sources  
(backlight; organic **electroluminescent device**,  
**illumination apparatus** and **display**)

IT Electroluminescent devices  
(displays; organic electroluminescent  
device, illumination apparatus and  
display)

IT Luminescent screens  
(electroluminescent; organic  
electroluminescent device, illumination  
apparatus and display)

IT Electroluminescent devices  
Phosphorescent substances  
(organic electroluminescent device,  
illumination apparatus and display)

IT 372956-40-6 817638-41-8 817638-42-9 817638-43-0 817638-44-1  
817638-45-2 817638-46-3 817638-47-4  
817638-48-5 817638-49-6 817638-50-9  
817638-51-0 817638-53-2 817638-55-4  
817638-56-5

RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent device,  
illumination apparatus and display)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN  
THE RE FORMAT

L40 ANSWER 14 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:33493 HCAPLUS Full-text

DOCUMENT NUMBER: 142:143760

TITLE: Electroluminescent benzene  
derivatives, and electroluminescent  
devices and displays employing  
same

INVENTOR(S): Nomura, Ryoji; Seo, Satoshi; Suzuki, Tsuneyoshi  
PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005008582	A	20050113	JP 2003-175999	200306 20

PRIORITY APPLN. INFO.:

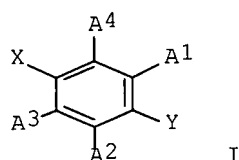
<-- JP 2003-175999

200306  
20

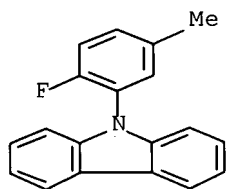
OTHER SOURCE(S): MARPAT 142:143760

GI

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- AB The **electroluminescent** benzene derivs. are I [X = H, electron-donating group; Y = H, electron-withdrawing group; one or two positions selected from A1-4 are substituted with (aryl- or heterocycle-substituted) luminophor such as anthracene, perylene, pyrene, carbazole, etc.], II [X1-2 = H, electron-donating group; Y1-2 = H, electron-withdrawing group; at least one selected from X1-2 and Y1-2 is electron-donating group or electron-withdrawing group; B1-2 = Q1, Q2, etc.], etc. The compds. are easy-to-align their mol. orientation, so that the dipole moment (formed by the electron-donating and/or -withdrawing groups) of the compds. is aligned in a direction parallel with an elec. field formed in-between electrodes while the transition moment of the luminophor is aligned in a direction parallel with the electrode plane, and resulting in improvement of external quantum efficiency.
- IT **816453-37-9**  
 RL: DEV (Device component use); USES (Uses)  
 (electroluminescent; electroluminescent  
 benzene derivs., and electroluminescent devices  
 employing same)
- RN 816453-37-9 HCAPLUS
- CN 9H-Carbazole, 9-(2-fluoro-5-methylphenyl)- (9CI) (CA INDEX NAME)



- IC ICM C07C025-18  
 ICS C07D209-86; C07D487-04; C07D487-06; C09K011-06; H05B033-14
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 74
- ST **electroluminescent** benzene deriv electron donating  
 withdrawing group; dipole moment alignment  
**electroluminescent device** benzene deriv
- IT **Electroluminescent devices**  
 (displays; electroluminescent benzene  
 derivs., and electroluminescent devices  
 employing same)
- IT **Electroluminescent devices**  
 (electroluminescent benzene derivs., and  
 electroluminescent devices employing same)
- IT **Luminescent screens**  
 (electroluminescent; electroluminescent  
 benzene derivs., and electroluminescent devices  
 employing same)
- IT 816453-36-8 **816453-37-9**

RL: DEV (Device component use); USES (Uses)  
 (electroluminescent; electroluminescent  
 benzene derivs., and electroluminescent devices  
 employing same)

L40 ANSWER 15 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:1038543 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:29775  
 TITLE: Organic electroluminescent (EL

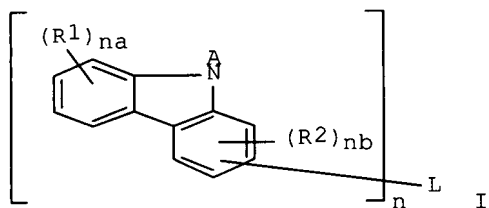
) device and  
 electroluminescent display  
 (ELD) and illumination assembled with  
 the same

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Oshiyama,  
 Tomohiro; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 61 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004342391	A	20041202	JP 2003-135706	200305 14

PRIORITY APPLN. INFO.: <-- JP 2003-135706  
 200305  
 14

OTHER SOURCE(S): MARPAT 142:29775  
 GI



AB The electroluminescent device has a light-emitting layer containing phosphorescent compds. and involves 9-azafluorene derivs. represented by the general formula I (A = alkyl, cycloalkyl, aryl, heteroaryl; R1, R2 = H, substituent; na = 0-4 integer; nb = 0-3 integer; n = 2-4 integer; L = n-valent linking group), preferably, in the light-emitting layer. The EL device shows high luminance and long half life.

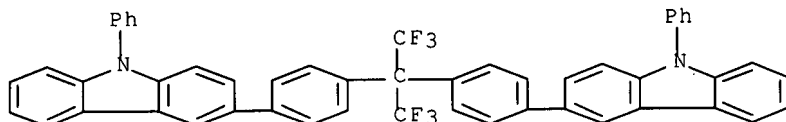
IT 799559-67-4

RL: DEV (Device component use); USES (Uses)  
 (host; organic electroluminescent (EL)  
 device containing 9-azafluorene derivs. for

**electroluminescent display (ELD) and  
illumination)**

RN 799559-67-4 HCAPLUS

CN 9H-Carbazole, 3,3'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]d  
i-4,1-phenylene]bis[9-phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; C07D209-86

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST illumination org electroluminescent

device azafluorene deriv; org electroluminescent

display azafluorene deriv host

IT Electroluminescent devices

(displays; organic electroluminescent (EL) device containing 9-azafluorene derivs. for electroluminescent display (ELD) and illumination)

IT Luminescent screens

(electroluminescent; organic electroluminescent (EL) device containing 9-azafluorene derivs. for electroluminescent display (ELD) and illumination)

IT Electric lamps

Phosphors

(organic electroluminescent (EL) device containing 9-azafluorene derivs. for electroluminescent display (ELD) and illumination)

IT 2085-33-8, Alq3

RL: DEV (Device component use); USES (Uses)

(electron-transporting layer, hole-barrier layer; organic electroluminescent (EL) device containing 9-azafluorene derivs. for electroluminescent display (ELD) and illumination)

IT 4733-39-5 138372-67-5 142289-08-5 203799-76-2 492446-89-6  
492446-97-6 799560-35-3

RL: DEV (Device component use); USES (Uses)

(hole-barrier layer; organic electroluminescent (EL) device containing 9-azafluorene derivs. for electroluminescent display (ELD) and illumination)

IT 123847-85-8

RL: DEV (Device component use); USES (Uses)

(hole-transporting layer; organic electroluminescent (EL) device containing 9-azafluorene derivs. for electroluminescent display (ELD) and illumination)

IT 799559-67-4 799559-70-9 799559-74-3

799559-82-3 799559-85-6 799559-88-9 799559-92-5 799559-96-9

799559-99-2 799560-03-5 799560-07-9

799560-10-4 799560-14-8 799560-17-1 799560-20-6



799560-23-9 799560-26-2

RL: DEV (Device component use); USES (Uses)  
(host; organic **electroluminescent** (EL)  
**device** containing 9-azafluorene derivs. for  
**electroluminescent display** (ELD) and  
**illumination**)

IT 799559-78-7P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(host; organic **electroluminescent** (EL)  
**device** containing 9-azafluorene derivs. for  
**electroluminescent display** (ELD) and  
**illumination**)

IT 799560-05-7

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent** (EL) **device**  
containing 9-azafluorene derivs. for **electroluminescent**  
**display** (ELD) and **illumination**)

IT 132-32-1, 3-Amino-9-ethylcarbazole

RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic **electroluminescent** (EL) **device**  
containing 9-azafluorene derivs. for **electroluminescent**  
**display** (ELD) and **illumination**)

IT 344796-22-1 376367-93-0

RL: DEV (Device component use); USES (Uses)  
(phosphorescent compound; organic **electroluminescent** (EL) **device** containing 9-azafluorene derivs. for  
**electroluminescent display** (ELD) and  
**illumination**)

L40 ANSWER 16 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:973456 HCAPLUS Full-text

DOCUMENT NUMBER: 142:122672

TITLE: New Carbazole-Oxadiazole Dyads for  
**Electroluminescent Devices:**

Influence of Acceptor Substituents on  
Luminescent and Thermal Properties

AUTHOR(S): Thomas, K. R. Justin; Lin, Jiann T.; Tao,  
Yu-Tai; Chuen, Chang-Hao

CORPORATE SOURCE: Institute of Chemistry, Academia Sinica, Taipei,  
Taiwan

SOURCE: Chemistry of Materials (2004), 16(25),  
5437-5444

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

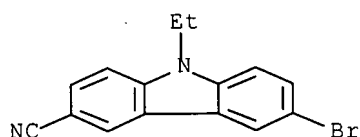
DOCUMENT TYPE: Journal

LANGUAGE: English

AB Carbazole-oxadiazole dyads linked by amino functionality is prepared in good yields by C-N coupling reactions catalyzed by Pd(dba)<sub>2</sub>/P(CMe<sub>3</sub>)<sub>3</sub> under basic conditions in toluene. The compds. possess addnl. electron-withdrawing groups such as CF<sub>3</sub> and CN either on oxadiazole or on carbazole nucleus. The placement of CF<sub>3</sub> on the oxadiazole end enhances the electron deficiency of the oxadiazole unit, while the CN substituent at the carbazole nucleus decreases the donor strength of carbazole. This results in slight alterations in the oxidation potentials and thermal properties of the resulting dyads. This also leads to a pathway for fine-tuning the energy levels and amorphous morphol. in these dyads. While CN groups alter by .apprx.0.2 eV the energy levels, a counterproductive T<sub>g</sub> reduction/thermal instability is observed for the CF<sub>3</sub> derivs. All of these derivs. **display** solvent-dependent emission profiles with the solid-state emission occurring in the cyan region. **Electroluminescent devices** fabricated using these compds. as hole-

transporting layer and Alq3 or TPBI as the electron-transporting layer emit cyan color. The emission in most cases arises from the HTL layer. However, slight distortions in shape and peak position of the EL spectra were noticed, which were attributed to either the mixing of emissions from HTL and ETL layer or the complex formation between the HTL and ETL materials. Energetics governing the confinement of excitons in the emissive layer is critically analyzed.

IT 764654-67-3, 6-Bromo-9-ethyl-9H-carbazole-3-carbonitrile  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (9-Ethyl-6-phenylamino-9H-carbazole-3-carbonitrile synthesis using)  
 RN 764654-67-3 HCAPLUS  
 CN 9H-Carbazole-3-carbonitrile, 6-bromo-9-ethyl- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 28, 69, 72, 76, 77  
 ST carbazole oxadiazole dyad acceptor substituent luminescence thermal property LED; **electroluminescence** carbazole oxadiazole dyad deriv acceptor substituent LED; cyclic voltammetry carbazole oxadiazole dyad deriv acceptor substituent LED; LUMO carbazole oxadiazole dyad deriv acceptor substituent LED; HOMO carbazole oxadiazole dyad deriv acceptor substituent LED; UV visible spectra carbazole oxadiazole dyad deriv acceptor substituent; FAB mass spectra carbazole oxadiazole dyad deriv acceptor substituent; NMR spectra carbazole oxadiazole dyad deriv acceptor substituent; oxidn potential carbazole oxadiazole dyad deriv acceptor substituent; decompn temp carbazole oxadiazole dyad deriv acceptor substituent; glass transition temp carbazole oxadiazole dyad deriv acceptor substituent; current voltage LED carbazole oxadiazole dyad deriv acceptor substituent  
 IT **Electroluminescent devices**  
 Glass transition temperature  
 Inductive effect  
 Luminescence  
 Oxidation potential  
 (carbazole-oxadiazole dyads for LEDs with acceptor substituent effects on luminescent and thermal properties)  
 IT Color  
 Cyclic voltammetry  
 Fast atom bombardment mass spectra  
 HOMO (molecular orbital)  
 LUMO (molecular orbital)  
 Luminescence, **electroluminescence**  
 NMR (nuclear magnetic resonance)  
 UV and visible spectra  
 (of carbazole-oxadiazole dyads for LEDs)  
 IT 62-53-3, Aniline, reactions 865-47-4 764654-67-3, 6-Bromo-9-ethyl-9H-carbazole-3-carbonitrile  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (9-Ethyl-6-phenylamino-9H-carbazole-3-carbonitrile synthesis using)

IT 220843-12-9 436800-48-5 821807-60-7 821807-61-8

821807-62-9

RL: RCT (Reactant); RACT (Reactant or reagent)

(carbazole-oxadiazole dyads for LEDs synthesized using)

IT 821807-55-0P 821807-56-1P 821807-57-2P

821807-58-3P 821807-59-4P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(carbazole-oxadiazole dyads for LEDs with acceptor substituent effects on luminescent and thermal properties)

REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L40 ANSWER 17 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:937054 HCAPLUS Full-text

DOCUMENT NUMBER: 142:103030

TITLE: **Light-Emitting** Fluorene  
Photoreactive Liquid Crystals for Organic  
**Electroluminescence**

AUTHOR(S): Aldred, Mathew P.; Eastwood, Amanda J.; Kelly, Stephen M.; Vlachos, Panos; Contoret, Adam E. A.; Farrar, Simon R.; Mansoor, Bassam; O'Neill, Mary; Tsoi, W. Chung

CORPORATE SOURCE: Department of Chemistry, University of Hull, Kingston, HU6 7RX, UK

SOURCE: Chemistry of Materials (2004), 16(24), 4928-4936

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB **Light-emitting** liquid crystals for organic **light-emitting** diodes (OLEDs) require low-temperature liquid crystal phases for room-temperature processing and a range of mol. energies for electron and hole injection, as well as tunable color and color purity for multicolor OLEDs. The authors report a number of **light-emitting** polymerizable liquid crystals (reactive mesogens) based on 2,7-disubstituted-9,9-dialkylfluorene, whose energy levels can be tuned for optimized charge injection and **light emission**. As a consequence of these systematic property/structure investigations small mol. reactive mesogens have been prepared, which exhibit low m.ps., even below room temperature and nematic phases above room temperature as single components. Many of the mols. retain a supercooled nematic phase on cooling to room temperature. Simple binary eutectic mixts. of reactive mesogens with identical aromatic cores form **light-emitting** nematic phases at room temperature with a high clearing point to generate a high order parameter. The ionization potential of six-ring fluorene reactive mesogens can be tuned between 4.93 and 5.57 eV by chemical modification of the aromatic cores. Similarly the emission spectrum can be tuned from blue to green. A typical performance for an OLED using such liquid crystalline materials as a crosslinked polymer network is described.

IT 819079-40-8P

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

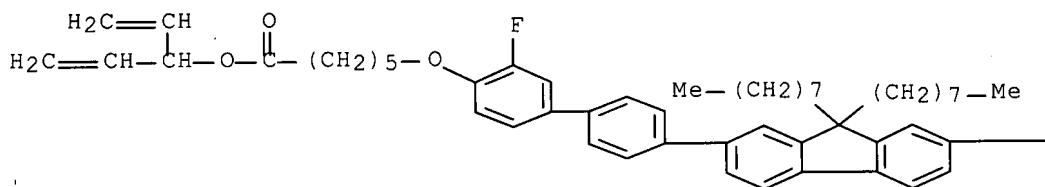
(m.ps. and nematic phases of **light-emitting**

polymerizable liquid crystals based on dialkylfluorene derivs. for  
**OLED display** applications)

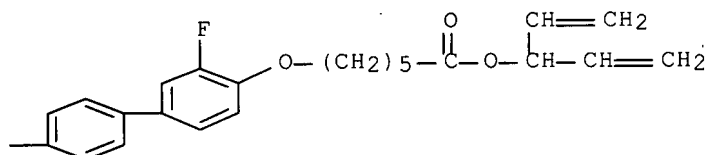
RN 819079-40-8 HCAPLUS

CN Hexanoic acid, 6,6'-[(9,9-dioctyl-9H-fluorene-2,7-diyl)bis[(3-fluoro[1,1'-biphenyl]-4',4-diyl)oxy]]bis-, bis(1-ethenyl-2-propenyl) ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73
- ST fluorene deriv liq crystal crosslinked polymer network  
**electroluminescent display; light emitting** polymerizable liq crystal fluorene deriv
- IT Multilayers  
(**OLED display** containing polymerizable liquid crystals based on disubstituted-9,9-dialkylfluorene)
- IT **Electroluminescent devices**  
(**displays; m.ps.** and nematic phases of **light-emitting** polymerizable liquid crystals based on dialkylfluorene derivs. for **OLED display** applications)
- IT Luminescent **screens**  
Luminescent substances  
(**electroluminescent; m.ps.** and nematic phases of **light-emitting** polymerizable liquid crystals based on dialkylfluorene derivs. for **OLED display** applications)
- IT Crosslinking  
Electron affinity  
Glass transition temperature  
Ionization potential  
Liquid crystals, polymeric  
Luminescence, **electroluminescence**  
Melting point  
Molecular structure-property relationship  
Polymer networks  
(**m.ps.** and nematic phases of **light-emitting** polymerizable liquid crystals based on dialkylfluorene derivs. for **OLED display** applications)
- IT Liquid crystals  
(nematic; **m.ps.** and nematic phases of **light-emitting** polymerizable liquid crystals based on dialkylfluorene derivs. for **OLED display** applications)

- IT Polymerization  
(photopolymn.; m.ps. and nematic phases of **light-emitting** polymerizable liquid crystals based on dialkylfluorene derivs. for **OLED display** applications)
- IT Liquid crystals  
(thermotropic; m.ps. and nematic phases of **light-emitting** polymerizable liquid crystals based on dialkylfluorene derivs. for **OLED display** applications)
- IT Liquid crystals  
(transitions; m.ps. and nematic phases of **light-emitting** polymerizable liquid crystals based on dialkylfluorene derivs. for **OLED display** applications)
- IT 155090-83-8, PEDOT-PSS  
RL: DEV (Device component use); USES (Uses)  
(**OLED display** containing polymerizable liquid crystals based on disubstituted-9,9-dialkylfluorene)
- IT 7429-90-5, Aluminum, properties 7789-24-4, Lithium fluoride, properties  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(combined cathode; **OLED display** containing polymerizable liquid crystals based on disubstituted-9,9-dialkylfluorene)
- IT 819079-54-4  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(hole transport and emissive layer; **OLED display** containing polymerizable liquid crystals based on disubstituted-9,9-dialkylfluorene)
- IT 150405-69-9, TAZ  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(hole-blocking layer; **OLED display** containing polymerizable liquid crystals based on disubstituted-9,9-dialkylfluorene)
- IT 819079-55-5P  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(m.ps. and nematic phases of **light-emitting** polymerizable liquid crystals based on dialkylfluorene derivs. for **OLED display** applications)
- IT 301652-15-3P 426820-34-0P 548772-59-4P 548772-60-7P  
548772-61-8P 548772-62-9P 548772-63-0P 548772-64-1P  
548772-65-2P 819079-26-0P 819079-27-1P 819079-28-2P  
819079-29-3P 819079-30-6P 819079-31-7P 819079-32-8P  
819079-33-9P 819079-34-0P 819079-35-1P 819079-36-2P  
819079-37-3P 819079-38-4P 819079-39-5P **819079-40-8P**  
**819079-41-9P 819079-42-0P 819079-43-1P**  
**819079-44-2P 819079-45-3P 819079-46-4P**  
819079-47-5P 819079-48-6P 819079-49-7P 819079-50-0P  
819079-51-1P 819079-52-2P  
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(m.ps. and nematic phases of **light-emitting** polymerizable liquid crystals based on dialkylfluorene derivs. for **OLED display** applications)
- IT 152397-22-3P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(synthesis of **light-emitting** polymerizable  
liquid crystals based on disubstituted dialkylfluorene)

REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L40 ANSWER 18 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:935420 HCAPLUS Full-text

DOCUMENT NUMBER: 141:403269

TITLE: Organic **electroluminescent**  
**device** for illumination  
**apparatus** and optical **display**

INVENTOR(S): Kita, Hiroshi; Yamada, Taketoshi; Suzurizato,  
Yoshiyuki

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 97 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004311411	A	20041104	JP 2004-49238	200402 25

PRIORITY APPLN. INFO.: <-- JP 2003-84072 A 200303  
26

OTHER SOURCE(S): MARPAT 141:403269  
GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

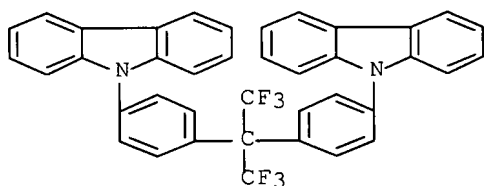
AB The invention relates to an organic **electroluminescent device**, suited for use in making an **illumination apparatus** and an optical **display**, comprising an **electroluminescent** layer containing a phosphorescent compound and the compound represented by I [R1-3 = alkyl, and cycloalkyl groups; n1 = 0-5 integer; n2 and n3 = 0-4 integer] and an organic layer containing a hole transporting compound represented by II [R11-14 = H, alkyl and bonding group; R11-14 = alkyl, aromatic, heterocyclic, etc.; m11, m12, m13, and m14 = 0-4 integer; L1 = III, IV, and -Ar1-L'-Ar2-, etc. [R15 = alkyl, alkoxy, alkylthio, etc.; R15 = alkyl, aromatic, heterocyclic, etc.; m15 = 0-3 integer; Ar1 and Ar2 = arylene group; L' = alkylene and phenylene]].

IT 697312-14-4

RL: DEV (Device component use); USES (Uses)  
(host material in **electroluminescent** layer; organic  
**electroluminescent device** for  
**illumination apparatus** and optical **display**  
)

RN 697312-14-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]d  
i-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



- IC ICM H05B033-14  
ICS C09K011-06; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 27, 74
- ST org **electroluminescent device** phosphorescence  
host material hole transporting
- IT **Electroluminescent devices**  
(displays; organic **electroluminescent device** for illumination apparatus and optical display)
- IT **Luminescent screens**  
(electroluminescent; organic **electroluminescent device** for illumination apparatus and optical display)
- IT **Electroluminescent devices**  
Light sources  
Phosphorescent substances  
(organic **electroluminescent device** for illumination apparatus and optical display)
- IT 58473-78-2 405171-87-1  
RL: DEV (Device component use); USES (Uses)  
(hole transporting material; organic **electroluminescent device** for illumination apparatus and optical display)
- IT 697312-14-4 697312-27-9 697312-28-0  
697312-29-1 697312-30-4 697312-31-5  
697312-32-6 697312-33-7 697312-34-8  
697312-35-9 697312-36-0  
RL: DEV (Device component use); USES (Uses)  
(host material in **electroluminescent layer**; organic **electroluminescent device** for illumination apparatus and optical display)
- IT 697312-26-8P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(host material in **electroluminescent layer**; organic **electroluminescent device** for illumination apparatus and optical display)
- IT 1095-78-9 5599-50-8 13029-09-9 786726-79-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic **electroluminescent device** for illumination apparatus and optical display)

)

L40 ANSWER 19 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:935418 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:417625  
 TITLE: Organic **electroluminescent device** for **display** and **illumination apparatus**  
 INVENTOR(S): Kita, Hiroshi; Suzurizato, Yoshiyuki  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004311405	A	20041104	JP 2004-30359	20040206

PRIORITY APPLN. INFO.: <-- JP 2003-87519 A 20030327

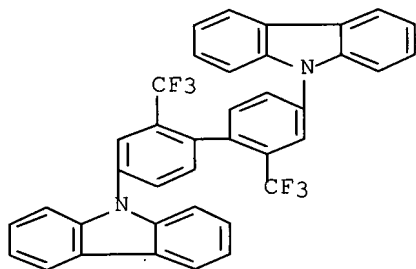
AB The invention relates to an organic **electroluminescent device**, suited for use in making an optical **display** and an **illumination apparatus**, comprising an **electroluminescent** layer containing a rhodium complex as a dopant, wherein the phosphorescence 0-0 band of the host material in the **electroluminescent** layer is  $\leq$  450 nm for ensuring the T-T energy transfer to the dopant.

IT 733038-91-0

RL: DEV (Device component use); USES (Uses)  
 (host material; organic **electroluminescent device**  
 for **display** and **illumination apparatus**)

RN 733038-91-0 HCAPLUS

CN 9H-Carbazole, 9,9'-[2,2'-bis(trifluoromethyl)[1,1'-biphenyl]-4,4'-diyl]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 74



ST org electroluminescent device phosphorescence  
rhodium complex

IT **Electroluminescent devices**  
(displays; organic electroluminescent  
device for display and illumination  
apparatus)

IT **Luminescent screens**  
(electroluminescent; organic  
electroluminescent device for display  
and illumination apparatus)

IT **Electroluminescent devices**  
Light sources  
Phosphorescent substances  
(organic electroluminescent device for  
display and illumination apparatus)

IT Coordination compounds  
RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent device for  
display and illumination apparatus)

IT 492446-97-6 592551-54-7 604785-54-8 607731-61-3 663219-32-7  
669072-95-1 733038-91-0 754231-95-3 754232-01-4  
787617-78-1 787617-79-2 787617-80-5 787617-81-6  
RL: DEV (Device component use); USES (Uses)  
(host material; organic electroluminescent device  
for display and illumination apparatus)

IT 153838-49-4 439801-48-6 791110-44-6 791110-46-8 791110-47-9  
791110-48-0 791110-49-1 791110-50-4 791110-51-5 791110-52-6  
791110-53-7 791110-54-8 791110-55-9  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(phosphorescent dopant; organic electroluminescent  
device for display and illumination  
apparatus)

L40 ANSWER 20 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:932026 HCAPLUS Full-text

DOCUMENT NUMBER: 141:403589

TITLE: Organic electroluminescent (EL  
) element with high luminance and excellent  
quantum efficiency and its illumination  
and display device

INVENTOR(S): Fukuda, Mitsuhiro; Suzurizato, Yoshiyuki; Kita,  
Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004311415	A	20041104	JP 2004-49242	200402 25

PRIORITY APPLN. INFO.:

JP 2003-79516

A

200303

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OTHER SOURCE(S): MARPAT 141:403589

AB The organic EL element involves a layer containing substituted carbazole compds., wherein the layer contain <0.5% compds. bearing amino groups in the moiety bonded to carbazole rings as impurities. The **light emitted** from the organic EL element on application of elec. field will contain phosphorescent light or white light.

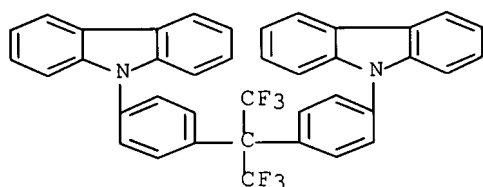
IT 697312-14-4P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

RN 697312-14-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]d i-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST org **electroluminescent** element **illumination**

**display**; carbazole deriv org **electroluminescent** element

IT **Electroluminescent devices**

**Illumination**

(carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

IT **Electroluminescent devices**

(**displays**; carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

IT Luminescent **screens**

(**electroluminescent**; carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

IT Phosphors

(white-emitting; carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

IT 787638-71-5P

RL: BYP (Byproduct); OCU (Occurrence, unclassified); OCCU

(Occurrence); PREP (Preparation)

(carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

IT 58328-31-7P 697312-14-4P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

IT 2085-33-8, Alq3 4733-39-5 94928-86-6 123847-85-8 139092-78-7  
148044-07-9 344796-22-1 376367-93-0 604785-54-8 769954-75-8  
787638-69-1 787638-70-4

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

IT 92-87-5, 4,4'-Diaminobiphenyl

RL: OCU (Occurrence, unclassified); RCT (Reactant); OCCU (Occurrence); RACT (Reactant or reagent)

(carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

IT 92-86-4, 4,4'-Dibromobiphenyl 1095-78-9, 2,2-Bis(4-aminophenyl)hexafluoropropane

RL: RCT (Reactant); RACT (Reactant or reagent)

(carbazole derivative-containing organic EL element with high luminance and excellent quantum efficiency and its illumination and display device)

L40 ANSWER 21 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:932025 HCAPLUS Full-text

DOCUMENT NUMBER: 141:403588

TITLE: Organic electroluminescent (EL)  
) element with high luminance and excellent quantum efficiency and illumination and display device assembled with the same

INVENTOR(S): Fukuda, Mitsuhiko; Ueda, Noriko; Yamada, Taketoshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 90 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004311413	A	20041104	JP 2004-49240	20040225

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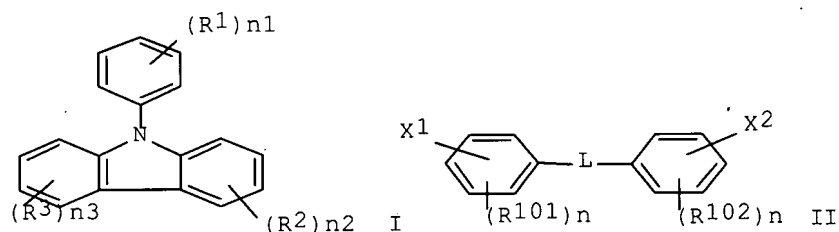
PRIORITY APPLN. INFO.:

JP 2003-84074

A

20030326

OTHER SOURCE(S): MARPAT 141:403588  
GI



AB The organic **EL** element contains organic layers containing at least **light-emitting** layers, wherein the **light-emitting** layers contain 9-phenylcarbazole derivs. I (R1-R3 = alkyl, cycloalkyl; n1 = 0-5 integer; n2, n3 = 0-4 integer) and phosphorescent compds. and ≥1 of the organic layers contain aromatic compds. II (X1, X2 = heterocyclic ring containing ≥2 N; L = bond, ≥1 of divalent groups selected from substd methylene, substd phenylene; R101, R102 = substituent; n, m = 0-4 integer), aryl group-containing 1,2,4-triazole derivs., aryl group-containing pyrimidine derivs., aryl group-containing 1,3,5-triazine derivs., aryl group-containing 1,3,4-thiadiazole derivs., aryl group-containing 1,3,4-oxadiazole derivs., and aryl group-containing imidazole derivs.

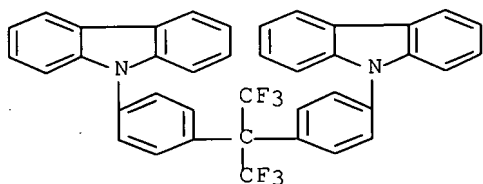
IT 697312-14-4P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(host; organic **EL** element with high luminance and excellent quantum efficiency for lighting and **display**)

RN 697312-14-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]d i-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73

ST org **electroluminescent device**  
**illumination** phenylcarbazole deriv; phenylcarbazole deriv  
org **electroluminescent display**

IT **Electroluminescent devices**  
(**displays**; organic **EL** element with high luminance and excellent quantum efficiency for lighting and

display)  
 IT Luminescent screens  
   (electroluminescent; organic EL  
   element with high luminance and excellent quantum efficiency for  
   lighting and display)  
 IT Electroluminescent devices  
   Illumination  
   (organic EL element with high luminance and excellent  
   quantum efficiency for lighting and display)  
 IT 94928-86-6  
   RL: MOA (Modifier or additive use); USES (Uses)  
   (dopant; organic EL element with high luminance and  
   excellent quantum efficiency for lighting and display)  
 IT 4733-39-5 14117-13-6 787640-66-8  
   RL: DEV (Device component use); TEM (Technical or engineered  
   material use); USES (Uses)  
   (electron-transporting layer; organic EL element with high  
   luminance and excellent quantum efficiency for lighting and  
   display)  
 IT 697312-14-4P 697312-26-8P  
   RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
   (Technical or engineered material use); PREP (Preparation); USES  
   (Uses)  
   (host; organic EL element with high luminance and  
   excellent quantum efficiency for lighting and display)  
 IT 58328-31-7 419536-32-6 697312-27-9 697312-28-0  
   697312-29-1 697312-30-4 697312-31-5  
   697312-32-6 697312-33-7  
   RL: DEV (Device component use); TEM (Technical or engineered  
   material use); USES (Uses)  
   (host; organic EL element with high luminance and  
   excellent quantum efficiency for lighting and display)  
 IT 2085-33-8, Alq3 123847-85-8  
   RL: DEV (Device component use); TEM (Technical or engineered  
   material use); USES (Uses)  
   (organic EL element with high luminance and excellent  
   quantum efficiency for lighting and display)  
 IT 1095-78-9 5599-50-8 13029-09-9 786726-79-2  
   RL: RCT (Reactant); RACT (Reactant or reagent)  
   (organic EL element with high luminance and excellent  
   quantum efficiency for lighting and display)

L40 ANSWER 22 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:842712 HCAPLUS Full-text

DOCUMENT NUMBER: 141:340072

TITLE: White-emitting organic  
 electroluminescent device with  
 high emission efficiency and long service life  
 and its display and  
 illumination

INVENTOR(S): Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 46 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004288381

A

20041014

JP 2003-75512

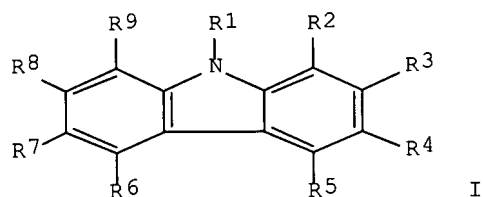
200303  
19

PRIORITY APPLN. INFO.:

JP 2003-75512

200303  
19OTHER SOURCE(S):  
GI

MARPAT 141:340072



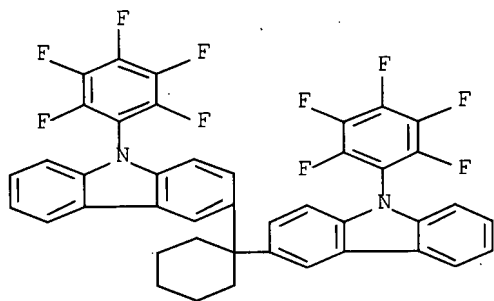
AB The organic **EL device** contains carbazol derivs. represented by the general formula I (R1 = H, substituent, F-containing aryl; when R1 = H or substituent,  $\geq 1$  of R2-R9 = F or F-containing aryl and other R2-R9 = H or substituent; when R1 = F-containing aryl, R2-R9 = H or substituent). The organic **EL device** will contain I and phosphorescent dopants in the **light-emitting** layer.

IT 773150-28-0

RL: DEV (Device component use); USES (Uses)  
(white-emitting organic **EL device** containing  
carbazol derivs. as hosts for phosphorescent dopants for  
**display** and **illumination**)

RN 773150-28-0 HCAPLUS

CN 9H-Carbazole, 3,3'-cyclohexylidenebis[9-(pentafluorophenyl)- (9CI)  
(CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06

CC 73-3 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

Section cross-reference(s): 74

ST carbazol deriv host org **electroluminescent device**

; phosphorescent dopant org **electroluminescent device**; org **electroluminescent display**  
 carbazol deriv host; **illumination** org  
**electroluminescent device** carbazol deriv

IT **Electroluminescent devices**

(**displays**; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT **Luminescent screens**

(**electroluminescent**; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT **Light**

(white, fluorescent; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT **Electroluminescent devices**

Phosphors

(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT 2085-33-8, Alq3 4733-39-5 58328-31-7 94928-86-6 123847-85-8

343978-79-0 376367-93-0 405171-87-1 **773150-28-0**

**773150-29-1 773150-30-4 773150-31-5**

**773150-32-6 773150-33-7 773150-34-8**

**773150-35-9 773150-36-0 773150-37-1**

**773150-38-2 773150-39-3 773150-40-6**

**773150-41-7 773150-42-8 773150-43-9**

RL: DEV (Device component use); USES (Uses)

(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

L40 ANSWER 23 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:842711 HCAPLUS Full-text

DOCUMENT NUMBER: 141:340137

TITLE: White-emitting organic  
**electroluminescent device** with  
 high emission efficiency and long service life  
 and its **display** and  
**illumination**

INVENTOR(S): Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004288380	A	20041014	JP 2003-75511	20030319

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PRIORITY APPLN. INFO.:

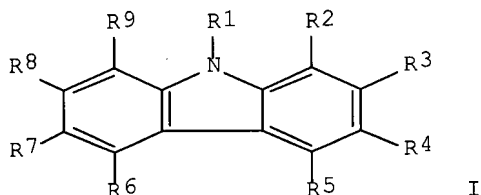
JP 2003-75511

200303

19

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OTHER SOURCE(S): MARPAT 141:340137  
GI



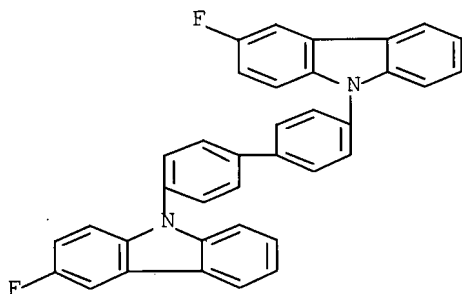
AB The organic **EL device** contains carbazol derivs. represented by the general formula I (R1 = H, substituent, F-containing alkyl; when R1 = H or substituent,  $\geq 1$  of R2-R9 = F or F-containing alkyl and other R2-R9 = H or substituent; when R1 = F-containing alkyl, R2-R9 = H or substituent). The organic **EL device** will contain I and phosphorescent dopants in the **light-emitting** layer.

IT 602331-44-2

RL: DEV (Device component use); USES (Uses)  
(white-emitting organic **EL device** containing  
carbazol derivs. as hosts for phosphorescent dopants for  
**display** and **illumination**)

RN 602331-44-2 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1'-biphenyl]-4,4'-diylbis[3-fluoro- (9CI) (CA  
INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST carbazol deriv host org **electroluminescent device**  
; phosphorescent dopant org **electroluminescent device**; org **electroluminescent display**  
carbazol deriv host; **illumination** org **electroluminescent device** carbazol deriv

IT **Electroluminescent devices**  
(**displays**; white-emitting organic **EL**)



**device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT Luminescent screens

(**electroluminescent**; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT Light

(white, fluorescent; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT Electroluminescent devices

Phosphors

(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

IT 2085-33-8, Alq3 4733-39-5 58328-31-7 94928-86-6 123847-85-8  
 344796-22-1 376367-93-0 405171-87-1 602331-44-2  
 773156-50-6 773156-51-7 773156-52-8 773156-53-9  
 773156-54-0 773156-55-1 773156-56-2 773156-57-3  
 773156-58-4 773156-59-5 773156-60-8  
 773156-61-9 773156-62-0 773156-63-1  
 773156-64-2

RL: DEV (Device component use); USES (Uses)

(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and **illumination**)

L40 ANSWER 24 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:798851 HCAPLUS Full-text

DOCUMENT NUMBER: 141:304397

TITLE: Organic **electroluminescent devices** with high luminescence intensity and efficiency for **displays** and light sources

INVENTOR(S): Oshiyama, Tomohiro; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 36 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004273190	A	20040930	JP 2003-59755	20030306

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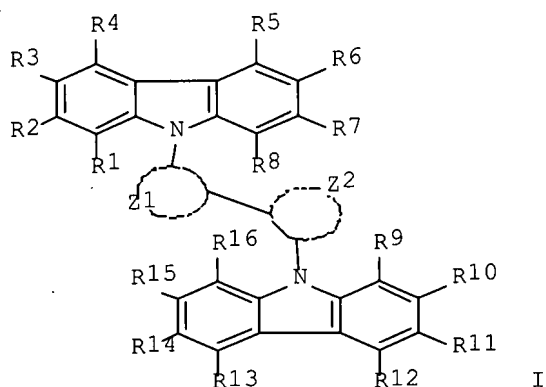
PRIORITY APPLN. INFO.: JP 2003-59755

20030306

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OTHER SOURCE(S): MARPAT 141:304397

GI



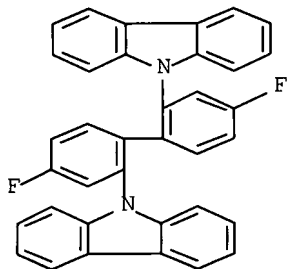
AB The organic **electroluminescent (EL) devices**, especially, blue-emitting **EL**, contain carbazole derivs. I (Z1, Z2 = atomic group for forming aromatic rings; R1-R16 = H, monovalent substituent). The devices containing the carbazole compds. and several phosphorescent dopants **emit white light**.

IT **763654-24-6**

RL: DEV (Device component use); USES (Uses)  
(emitter layer; organic **electroluminescent devices**  
containing specific carbazole derivs. and phosphorescent compds.)

RN 763654-24-6 HCAPLUS

CN 9H-Carbazole, 9,9'-(4,4'-difluoro[1,1'-biphenyl]-2,2'-diyl)bis-  
(9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C07D209-80; C09K011-06; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)

Section cross-reference(s): 28, 73

ST org **EL** blue emitting carbazole **electroluminescent**  
host; iridium phosphorescent dopant org **EL display**  
; light source triazole hole barrier org **EL**

IT **Electroluminescent devices**

(blue-emitting; organic **electroluminescent devices**  
containing specific carbazole derivs. and phosphorescent compds.)

IT **Electroluminescent devices**

(displays; organic **electroluminescent**  
**devices** containing specific carbazole derivs. and

- phosphorescent compds.)
- IT **Luminescent screens**  
 Luminescent substances  
 (electroluminescent; organic  
 electroluminescent devices containing specific  
 carbazole derivs. and phosphorescent compds.)
- IT Light sources  
 Phosphorescent substances  
 (organic electroluminescent devices containing  
 specific carbazole derivs. and phosphorescent compds.)
- IT **Electroluminescent devices**  
 (organic; organic electroluminescent devices containing  
 specific carbazole derivs. and phosphorescent compds.)
- IT 94928-86-6 343978-78-9 344796-22-1 376367-93-0  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)  
 (dopant in emitter layer; organic electroluminescent  
 devices containing specific carbazole derivs. and  
 phosphorescent compds.)
- IT 763653-96-9 **763654-24-6** 763654-29-1 763654-35-9  
 RL: DEV (Device component use); USES (Uses)  
 (emitter layer; organic electroluminescent devices  
 containing specific carbazole derivs. and phosphorescent compds.)
- IT 592551-54-7P 763653-89-0P  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
 (Preparation); USES (Uses)  
 (emitter layer; organic electroluminescent devices  
 containing specific carbazole derivs. and phosphorescent compds.)
- IT 4733-39-5 61843-06-9 146162-54-1 150405-69-9 492446-97-6  
 RL: DEV (Device component use); USES (Uses)  
 (hole-barrier layer; organic electroluminescent  
 devices containing specific carbazole derivs. and  
 phosphorescent compds.)
- IT 1454-80-4P, 2,2'-Diaminobiphenyl 2436-96-6P, 2,2'-Dinitrobiphenyl  
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (organic electroluminescent devices containing  
 specific carbazole derivs. and phosphorescent compds.)
- IT 577-19-5, 2-Bromonitrobenzene 13029-09-9, 2,2'-Dibromobiphenyl  
 40385-54-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (organic electroluminescent devices containing  
 specific carbazole derivs. and phosphorescent compds.)

L40 ANSWER 25 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:739385 HCAPLUS Full-text

DOCUMENT NUMBER: 141:268179

TITLE: Long-life white-emitting organic  
 electroluminescent devices,  
 displays, illumination  
 apparatus, and electric appliances  
 therewith

INVENTOR(S): Fukuda, Mitsuhiro; Genda, Kazuo

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 577 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004253298	A	20040909	JP 2003-43860	200302 21

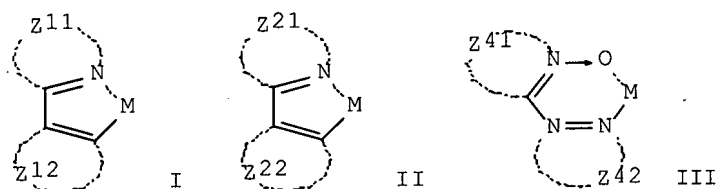
PRIORITY APPLN. INFO.:

&lt;-- JP 2003-43860

200302  
21OTHER SOURCE(S):  
GI

MARPAT 141:268179

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AB The devices have, in their constituent layers (e.g., emitting layers, hole- or electron-transporting layers), (i) compds. represented by  $X_1R_1C:CR_2X_2$  [ $X_1, X_2$  = aryl, heterocycle;  $R_1, R_2$  = aryl, heterocyclic hydrocarbyl, cycloalkoxy ( $R_1 = R_2$  = aryl)],  $R_{11}R_{12}R_{13}R_{14}R_{15}P$  ( $R_{11}-R_{15}$  = monovalent substituent),  $Ar_2Ar_1C_6H_4(m-Ar_1Ar_2)$  [ $Ar_1$  = bivalent aromatic hydrocarbylene;  $Ar_2$  = (substituted) Ph; H atom on the benzene ring may be substituted with (cyclo)alkyl, alkoxy, or halo],  $Z(ArQ)_n$  [ $Q$  = (substituted) o-(2-pyridyl)phenyl;  $Z$  = n-valent bridging group, single bond;  $Ar$  = bivalent arylene;  $n$  = 2-8], etc., (ii) fluorescent compds. with mol. weight 500-2000 and atomic ratio  $F/(F + H)$  0-0.9 and having fluorescent peak at  $\leq 415$  nm, (iii) polysilanes  $(R_{21}R_{22}Si)_n$  [ $R_{21}, R_{22}$  = alkyl(oxy), aromatic group, aryloxy;  $n_1 \geq 3$ ] or  $[R_{31}(Ar_{31}NR_{32}R_{33})Si]_n$  [ $R_{31}$  = alkyl(oxy), aromatic group, aryloxy;  $R_{32}, R_{33}$  = alkyl, aromatic group;  $Ar_{31}$  = arylene;  $n_2 \geq 3$ ], and/or (iv) fluorescent compds. satisfying atomic ratio  $N/C$  0-0.05. The devices, having phosphorescent dopants I ( $Z_{11}$  = aromatic azacycle;  $Z_{12}$  = nonarom. ring, 5-membered aromatic ring, azulene;  $M$  = metal), II ( $Z_{21}, Z_{22}$  = aromatic azacycle;  $M$  = metal), or III ( $Z_{41}$  = azacycle;  $Z_{42}$  = ring;  $M$  = metal) in emitting layers, are also claimed. The devices exhibit high luminescent efficiency and substantially white emission, and are suited for light source uses, especially of LCD.

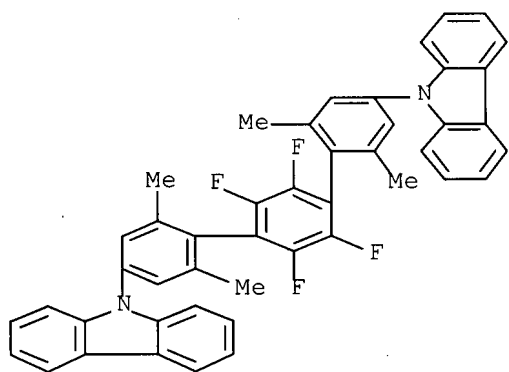
IT 666839-81-2

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

RN 666839-81-2 HCAPLUS

CN 9H-Carbazole, 9,9'-(2',3',5',6'-tetrafluoro-2,2'',6,6''-tetramethyl[1,1':4',1''-terphenyl]-4,4''-diyl)bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06; G02F001-1335; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 28, 29, 38, 74

ST white emitting **electroluminescent** life luminescent efficiency; phosphorescent azacyclic dopant **luminescent** efficiency **org** LED; LCD **light** source white **emitting** electrophosphorescent

IT Luminescent substances  
(**electroluminescent**, electrophosphorescent, host-guest; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT Liquid crystal **displays**  
(light sources for; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT **Electroluminescent devices**  
(white-emitting, electrophosphorescent; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT 71-43-2, Benzene, uses 159-68-2, 9,9'-Spirobi[9H-9-silafluorene]  
346-02-1 752-28-3 1423-70-7 17742-49-3 18822-13-4  
20156-53-0 32314-41-3 33861-11-9 35088-77-8 38186-32-2  
54765-15-0 65181-79-5 122107-04-4 133942-93-5 139376-06-0  
142289-08-5 203070-80-8 213621-16-0 219917-71-2 288581-17-9  
300823-56-7 300823-57-8 301300-11-8 332350-53-5 405171-49-5  
405171-87-1 405172-39-6 453590-51-7 478262-73-6 478262-74-7  
478262-76-9 478262-77-0 478262-78-1 478262-79-2 478370-42-2  
492446-94-3 492446-97-6 497097-34-4 497097-36-6 511270-11-4  
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569674-85-7 569674-87-9 569674-89-1 569674-90-4 569674-92-6  
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606142-58-9 606142-59-0 606142-60-3 606142-61-4 608145-70-6  
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620630-63-9 620630-64-0 620630-65-1 620630-66-2 620630-67-3

640773-62-2	640773-65-5	640773-68-8	643029-54-3	643029-58-7
643029-59-8	643029-60-1	643029-61-2	643029-63-4	643753-82-6
643758-09-2	643758-10-5	643758-15-0	644973-61-5	644973-63-7
644973-65-9	644973-67-1	645399-24-2	645399-25-3	645399-27-5
645399-33-3	645399-37-7	650606-83-0	650606-86-3	650606-88-5
650606-89-6	650606-91-0	650606-97-6	655236-05-8	655236-07-0
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694534-41-3	694534-43-5	694534-44-6	694534-45-7	694534-46-8
694534-47-9	705941-97-5	705942-24-1	705973-76-8	705973-79-1
705973-80-4	705973-82-6	722547-84-4	722547-85-5	722547-86-6
722547-87-7	722547-88-8	722547-89-9	754231-79-3	754231-80-6
754231-82-8	754231-83-9	754231-84-0	754231-87-3	754231-88-4
754231-89-5	754231-90-8	754231-91-9	754231-92-0	754231-94-2

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

L40 ANSWER 26 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:632515 HCAPLUS Full-text

DOCUMENT NUMBER: 141:182064

TITLE: Organic **electroluminescent device** showing stable operation for **flat panel display**

INVENTOR(S): Yoneyama, Tomio; Sato, Itsuki; Sato, Hideki

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 38 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004220931	A	20040805	JP 2003-7300	20030115

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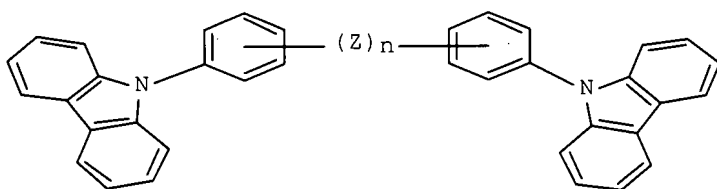
PRIORITY APPLN. INFO.: JP 2003-7300

20030115

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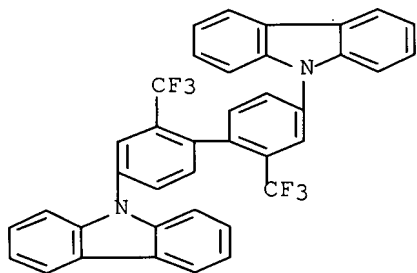
OTHER SOURCE(S): MARPAT 141:182064

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I

- AB The title **electroluminescent device** includes a compound represented by I (Z = divalent connection group; n = 0-5) in a pos. hole blocking layer. The compds. were synthesized in the examples.
- IT **733038-91-0P**  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation of pos. hole blocking material for organic **electroluminescent device** showing stable operation for **flat panel display**)
- RN 733038-91-0 HCAPLUS
- CN 9H-Carbazole, 9,9'-[2,2'-bis(trifluoromethyl)[1,1'-biphenyl]-4,4'-diyl]bis- (9CI) (CA INDEX NAME)



- IC ICM H05B033-22  
 ICS C07D403-10; C07D403-12; C07D413-10; C09K011-06; H05B033-14
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73
- ST org **electroluminescent device display**  
 pos hole blocking material
- IT **Electroluminescent devices**  
 (displays; organic **electroluminescent device** showing stable operation for **flat panel display**)
- IT **Luminescent screens**  
 (electroluminescent; organic **electroluminescent device** showing stable operation for **flat panel display**)
- IT 733038-87-4P 733038-89-6P **733038-91-0P**  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation of pos. hole blocking material for organic **electroluminescent device** showing stable operation for **flat panel display**)

IT 80-08-0, Bis(4-aminophenyl)sulfone 86-74-8, Carbazole 341-58-2,  
 4,4'-Diamino-2,2'-bis(trifluoromethyl)biphenyl 2425-95-8,  
 2,5-Bis(4-aminophenyl)-1,3,4-oxadiazole 7681-11-0, Potassium  
 iodide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of pos. hole blocking material for organic  
**electroluminescent device** showing stable  
 operation for **flat panel display**)

IT 100541-43-3P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation of pos. hole blocking material for organic  
**electroluminescent device** showing stable  
 operation for **flat panel display**)

L40 ANSWER 27 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:512741 HCAPLUS Full-text

DOCUMENT NUMBER: 141:79110

TITLE: Organic **electroluminescent**  
**devices/displays**

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004178896	A	20040624	JP 2002-342194	200211 26

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PRIORITY APPLN. INFO.: JP 2002-342194  
 200211  
 26

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OTHER SOURCE(S): MARPAT 141:79110

AB The devices/**displays** comprise, in organic layers, triarylamines NAr<sub>1</sub>Ar<sub>2</sub>Ar<sub>3</sub> (Ar<sub>1</sub>-3 = substituted ph or 4-biphenyl having carbazoyl substituent) as hosts, and phosphorescent substances capable of emitting from the triplet-state exciton as dopants. Preferably, the dopants are complexes of Group VIIIB metals. The devices/**displays** show high luminance, quantum efficiency, and long half-life.

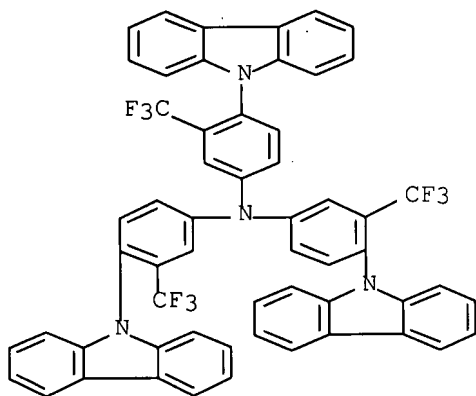
IT 710306-24-4

RL: TEM (Technical or engineered material use); USES (Uses)  
 (host; organic **electroluminescent device**/  
**displays** containing triarylamine hosts and phosphorescent  
 dopants)

RN 710306-24-4 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-3-(trifluoromethyl)phenyl]-3-(trifluoromethyl)- (9CI) (CA INDEX NAME)

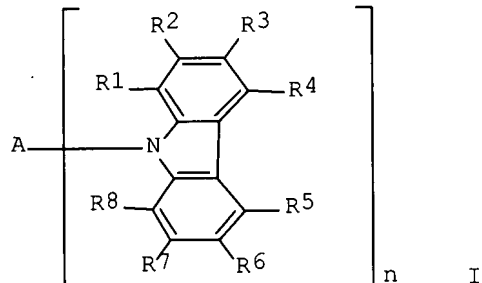




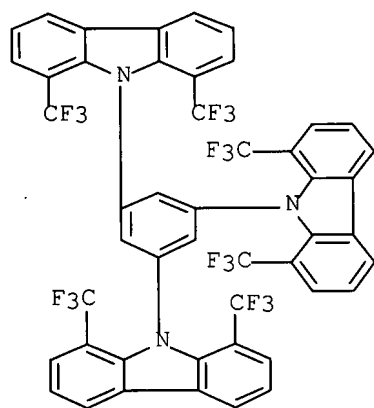
IC ICM H05B033-14  
ICS C09K011-06; H05B033-12  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74  
ST org **electroluminescent device** triarylamine host phosphorescent dopant; **display** org **electroluminescent** triarylamine host phosphorescent dopant; Group IIIB metal complex dopant org **electroluminescent device**  
IT **Electroluminescent devices**  
(**displays**, organic; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)  
IT **Luminescent screens**  
(**electroluminescent**, organic; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)  
IT **Luminescent substances**  
(**electroluminescent**; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)  
IT **Electroluminescent devices**  
(organic; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)  
IT 655240-58-7 710306-22-2 **710306-24-4** 710306-25-5  
710306-26-6 710306-27-7 710306-28-8 710306-29-9 710306-30-2  
710306-31-3 **710306-33-5** 710306-34-6 710306-35-7  
710306-36-8 710306-37-9 **710320-40-4**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(host; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)  
IT 94928-86-6 344796-22-1 376367-93-0  
RL: TEM (Technical or engineered material use); USES (Uses)  
(phosphorescent dopant; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants).

TITLE: Organic **electroluminescent device** and **display**  
 INVENTOR(S): Fukuda, Mitsuhiro; Yamada, Taketoshi; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 35 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004171808	A	20040617	JP 2002-333320	20021118
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PRIORITY APPLN. INFO.:			JP 2002-333320	20021118
			<--	
OTHER SOURCE(S):	MARPAT 141:61823			
GI				



AB The invention relates to an organic **electroluminescent device** and **display**, especially a phosphorescent **electroluminescence device**, comprising the carbazole derivative represented by I [A = aromatic ring residue; R1-8 = H and substituted group (at least one of R1-8 is a substituted group other than H); n = ≥1 integer].  
 IT 705280-88-2  
 RL: DEV (Device component use); USES (Uses)  
 (phosphorescent organic **electroluminescent device** and **display**)  
 RN 705280-88-2 HCAPLUS  
 CN 9H-Carbazole, 9,9',9''-(1,3,5-benzenetriyl)tris[1,8-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)]



IC ICM H05B033-14  
ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74

ST carbazole deriv phosphorescence org **electroluminescent device display**

IT **Electroluminescent devices**  
(displays; phosphorescent organic **electroluminescent device and display**)

IT Luminescent screens  
(**electroluminescent**; phosphorescent organic **electroluminescent device and display**)

IT **Electroluminescent devices**  
(phosphorescent organic **electroluminescent device and display**)

IT 86-74-8D, Carbazole, derivs. 705280-84-8 705280-85-9  
705280-86-0 705280-87-1 705280-88-2 705280-89-3  
705280-90-6 705280-91-7 705280-92-8  
705280-93-9 705280-94-0 705280-95-1 705280-96-2  
705280-97-3 705280-98-4 705280-99-5 705281-00-1 705281-01-2  
RL: DEV (Device component use); USES (Uses)  
(phosphorescent organic **electroluminescent device and display**)

IT 705280-81-5P 705280-83-7P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(phosphorescent organic **electroluminescent device and display**)

IT 108-77-0, 1,3,5-Trichlorotriazine 626-39-1, 1,3,5-Tribromobenzene  
5599-50-8, 3,6-Dimethylcarbazole 6825-20-3, 3,6-Dibromocarbazole  
13922-41-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(phosphorescent organic **electroluminescent device and display**)

IT 705280-82-6P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(phosphorescent organic **electroluminescent device and display**)

L40 ANSWER 29 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:473163 HCAPLUS Full-text

DOCUMENT NUMBER: 141:30891

TITLE: Organic **electroluminescent device** and **display**

INVENTOR(S): Fukuda, Mitsuhiro; Kita, Hiroshi; Yamada, Taketoshi

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 37 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2004110031	A1	20040610	US 2003-718360	200311 20
			<--	
JP 2004178895	A	20040624	JP 2002-342192	200211 26
			<--	
PRIORITY APPLN. INFO.:			JP 2002-342192	A 200211 26
			<--	

OTHER SOURCE(S): MARPAT 141:30891

AB Disclosed is an organic **electroluminescent device** comprising a component layer including a **light emission** layer, wherein the **light emission** layer contains a phosphorescent compound, and the component layer contains a compound represented by A-(Z)n, [A = (un)substituted aromatic ring residue; n = 3-6 integer; and Z = monovalent organic group represented by -LCz, [L = chemical bond and divalent linking group; Cz = (un)substituted carbazole residue], provided that A-(Z)n does not have an n-fold axis of symmetry].

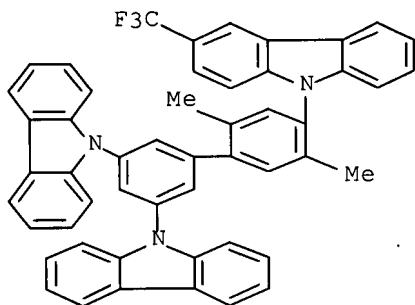
IT 699119-86-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic **electroluminescent device** and **display** having **light emitting** layer containing phosphorescent substance)

RN 699119-86-3 HCAPLUS

CN 9H-Carbazole, 9-(3',5'-di-9H-carbazol-9-yl-2,5-dimethyl[1,1'-biphenyl]-4-yl)-3-(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

INCL 428690000; 428917000; 313504000; 313506000; 257102000; 257103000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST org **electroluminescent device display**  
phosphorescent substance

IT **Electroluminescent devices**  
(**displays**; organic **electroluminescent device** and **display** having light emitting layer containing phosphorescent substance)

IT **Luminescent screens**  
(**electroluminescent**; organic **electroluminescent device** and **display** having light emitting layer containing phosphorescent substance)

IT **Electroluminescent devices**  
Phosphorescent substances  
(organic **electroluminescent device** and **display** having light emitting layer containing phosphorescent substance)

IT 699119-91-0P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(lorg. **electroluminescent device** and **display** having light emitting layer containing phosphorescent substance)

IT 94928-86-6 343978-79-0 376367-93-0  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(organic **electroluminescent device** and **display** having light emitting layer containing phosphorescent substance)

IT 699119-36-3P 699119-40-9P 699119-44-3P 699119-49-8P  
699119-54-5P 699119-58-9P 699119-61-4P 699119-65-8P  
699119-69-2P 699119-73-8P 699119-77-2P 699119-81-8P  
**699119-86-3P 699119-96-5P 699120-00-8P**

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic **electroluminescent device** and **display** having light emitting layer containing phosphorescent substance)

IT 86-74-8, 9H-Carbazole 98-80-6 626-39-1 2408-70-0 36847-11-7  
202865-85-8 699119-05-6

RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic **electroluminescent device** and

**display** having light emitting layer  
 containing phosphorescent substance)  
 IT 6825-20-3P 56525-79-2P 699119-10-3P 699119-14-7P  
 699119-23-8P 699119-26-1P 699119-32-9P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (organic **electroluminescent device** and  
**display** having light emitting layer  
 containing phosphorescent substance)

L40 ANSWER 30 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:446941 HCAPLUS Full-text

DOCUMENT NUMBER: 141:30822

TITLE: Organic **electroluminescent** element,  
**display** and illuminator

INVENTOR(S): Oshiyama, Tomohiro; Kinoshita, Motoi; Yamada,  
 Taketoshi; Kita, Hiroshi; Fukuda, Mitsuhiro;  
 Suzuri, Yoshiyuki; Ueda, Noriko

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Eur. Pat. Appl., 162 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
EP 1424381	A2	20040602	EP 2003-26685	200311 20
<--				
EP 1424381	A3	20050119		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004335427	A	20041125	JP 2003-160609	200306 05
<--				
US 2004115476	A1	20040617	US 2003-718025	200311 20
<--				
JP 2004311410	A	20041104	JP 2004-49237	200402 25
<--				
JP 2004311412	A	20041104	JP 2004-49239	200402 25
<--				
JP 2004311414	A	20041104	JP 2004-49241	200402 25
<--				
PRIORITY APPLN. INFO.:			JP 2002-342193	A 200211 26

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 JP 2003-61201 A 200303  
 07  
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 JP 2003-84071 A 200303  
 26  
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 JP 2003-84073 A 200303  
 26  
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 JP 2003-84075 A 200303  
 26  
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 JP 2003-160609 A 200306  
 05  
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OTHER SOURCE(S): MARPAT 141:30822  
 GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

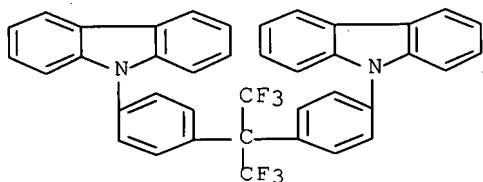
AB The invention refers to an organic **electroluminescent** element comprising a component layer between an anode and cathode containing a compound represented by  $X1-(A1)_n$  wherein  $A1 = I$  [Ar = divalent aromatic hydrocarbon or aromatic, heterocyclic;  $R1,2 = H$ , (un)substituted alkyl, cycloalkyl, aralkyl, aryl, alkoxy, aryloxy, or alkenyl, cyano, hydroxyl or halo;  $na,nb = 1 - 4$ ;  $X1 = II - XII$ ;  $R11-14, R21-24, R31-34 = H$ , (un)substituted alkyl, cycloalkyl, aralkyl, aryl, alkoxy, aryloxy, or alkenyl, cyano, hydroxyl or halo;  $R41,42, R61 = alkyl$ ;  $R51-52 =$  (un)substituted alkyl, cycloalkyl, aralkyl, aryl, alkoxy, aryloxy or alkenyl, cyano, hydroxyl or halo;  $Xa =$  divalent unsubstituted alkyl-substituted or 6- or 7-membered monocyclic heterocycle;  $R71-78, R81-88, R91-98 = H, alkyl$ , \* represents a linkage site].

IT 697312-14-4

RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent** element, **display** and **illuminator**)

RN 697312-14-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-  
 i-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
ICS H05B033-14; H01L051-20  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST electroluminescent display carbazole deriv  
IT Electroluminescent devices  
(displays; organic electroluminescent element, display and illuminator)  
IT Luminescent screens  
(electroluminescent; organic electroluminescent element, display and illuminator)  
IT 419536-32-6 697311-97-0 697311-98-1 697311-99-2 697312-00-8  
697312-01-9 697312-02-0 697312-03-1 697312-04-2 697312-05-3  
697312-06-4 697312-07-5 697312-08-6 697312-09-7 697312-10-0  
697312-11-1 697312-12-2 697312-13-3 697312-14-4  
697312-15-5 697312-16-6 697312-17-7  
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697312-27-9 697312-28-0 697312-29-1  
697312-30-4 697312-31-5 697312-32-6  
697312-33-7 697312-34-8 697312-35-9 697312-36-0  
RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent element, display and illuminator)

L40 ANSWER 31 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:200969 HCAPLUS Full-text

DOCUMENT NUMBER: 140:261489

TITLE: Organic electroluminescent device and display

apparatus showing improved brightness, light-efficiency, and durability

INVENTOR(S): Matsuura, Mitsunobu; Kinoshita, Motoki; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 43 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004079265	A	20040311	JP 2002-235613	20020813

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PRIORITY APPLN. INFO.:

JP 2002-235613

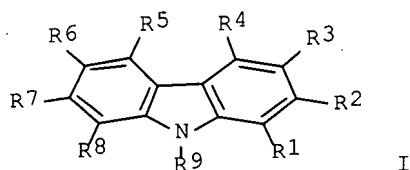
20020813

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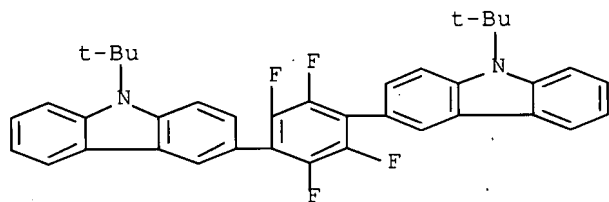
OTHER SOURCE(S): MARPAT 140:261489

GI





- AB The title organic **electroluminescent display device** contains a 350-2000 mol. weight carbazole derivative(s) represented by I (R1-8 = H, alkyl, aryl, alkyloxy, aryloxy, alkylthio, arylthio, amino, alkylamino, arylamino, heterocyclyl, silyl; R9 = alkyl) as a host compound The organic **electroluminescent display device** contains a phosphor compound dopant selected from Ir compound, Os compound, and Pt compound, preferably Ir compound
- IT **669072-39-3**  
 RL: DEV (Device component use); USES (Uses)  
 (carbazole host compound; organic **electroluminescent display** showing improved brightness, light-efficiency, and durability)
- RN 669072-39-3 HCAPLUS
- CN 9H-Carbazole, 3,3'-(2,3,5,6-tetrafluoro-1,4-phenylene)bis[9-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



- IC ICM H05B033-14  
 ICS C09K011-06
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73
- ST org **electroluminescent display** carbazole host  
 phosphor dopant
- IT **Electroluminescent devices**  
 (displays; organic **electroluminescent device** and **display apparatus** showing improved brightness, light-efficiency, and durability)
- IT **Luminescent screens**  
 (electroluminescent; organic **electroluminescent device** and **display apparatus** showing improved brightness, light-efficiency, and durability)
- IT 121-43-7, Trimethoxyboron 132-32-1, 3-Amino-9-ethylcarbazole  
 1074-24-4, 1,4-Dibromo-2,5-dimethylbenzene 7681-11-0, Potassium iodide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (carbazole host compound synthesis; organic **electroluminescent display** showing improved brightness, light-efficiency, and durability)

IT 50668-21-8P, 3-Iodo-9-ethylcarbazole 669072-93-9P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (carbazole host compound synthesis; organic **electroluminescent display** showing improved brightness, light-efficiency, and durability)

IT 669072-95-1P  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (carbazole host compound synthesis; organic **electroluminescent display** showing improved brightness, light-efficiency, and durability)

IT 20466-00-6 25557-82-8 669072-31-5 669072-32-6 669072-34-8  
 669072-36-0 669072-39-3 669072-42-8 669072-44-0  
 669072-47-3 669072-48-4 669072-50-8 669072-52-0 669072-54-2  
 669072-57-5 669072-60-0 669072-63-3 669072-66-6  
 669072-69-9 669072-72-4 669072-75-7 669072-78-0  
 669072-80-4 669072-83-7 669072-86-0 669072-88-2  
 669072-91-7 669072-92-8  
 RL: DEV (Device component use); USES (Uses)  
 (carbazole host compound; organic **electroluminescent display** showing improved brightness, light-efficiency, and durability)

IT 376367-93-0  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (phosphor dopant; organic **electroluminescent display** showing improved brightness, light-efficiency, and durability)

L40 ANSWER 32 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:180586 HCAPLUS Full-text

DOCUMENT NUMBER: 140:243316

TITLE: Organic **electroluminescent device and display**

INVENTOR(S): Matsuura, Mitsunobu; Kinoshita, Motoki; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 34 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004071380	A	20040304	JP 2002-229853	20020807

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PRIORITY APPLN. INFO.:

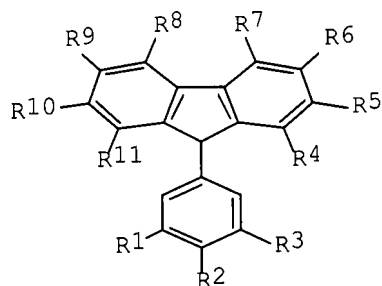
JP 2002-229853

20020807

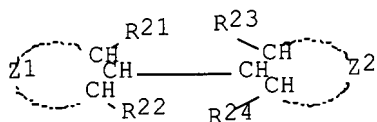
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OTHER SOURCE(S): MARPAT 140:243316

GI



I



II

AB The invention relates to an organic **electroluminescent device**, suited for use in making an **electroluminescent display**, comprising a **light-emitting** layer containing a phosphorescent substance as a host material and a dopant, wherein one of the layer contains the carbazole derivative represented by I [R1-11 = H and substituted groups; at least one of R1-3 is represented by II [Z1 and Z2 = atoms needed to form aromatic rings; R21-24 = H and substituted groups; n = 0 or 1, when n = 0, then one of R23 and R24 is a substituted group, and otherwise, two of R21, R22, R23, and R24 are substituted groups]; R1-3 does not link to from a ring].

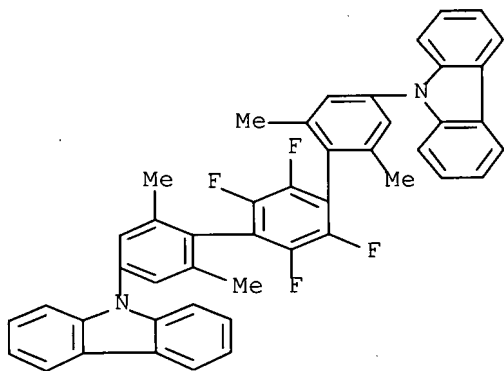
IT 666839-81-2

RL: DEV (Device component use); USES (Uses)

(carbazole derivative contained in organic **electroluminescent device**)

RN 666839-81-2 HCAPLUS

CN 9H-Carbazole, 9,9'-(2',3',5',6'-tetrafluoro-2,2'',6,6''-tetramethyl[1,1':4',1''-terphenyl]-4,4''-diyl)bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST org **electroluminescent device** carbazole  
phosphorescent substance

IT **Electroluminescent devices**  
(carbazole derivative-containing organic **electroluminescent device and display**)

IT **Electroluminescent devices**  
(**displays**; carbazole derivative-containing organic **electroluminescent device and display**)

IT Luminescent **screens**  
(**electroluminescent**; carbazole derivative-containing organic **electroluminescent device and display**)

IT Phosphorescent substances  
(in **electroluminescent device and display**)

IT 604785-54-8 666839-78-7 666839-79-8 666839-80-1  
666839-81-2 666839-82-3 666839-83-4 666839-84-5  
666839-85-6 666839-86-7 666839-87-8 666839-88-9 666839-89-0  
666839-90-3 666839-91-4 666839-92-5  
666839-93-6 666839-94-7

RL: DEV (Device component use); USES (Uses)  
(carbazole derivative contained in organic **electroluminescent device**)

L40 ANSWER 33 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:152356 HCAPLUS Full-text

DOCUMENT NUMBER: 140:321858

TITLE: New blue **electroluminescent** n-type  
polyfluorene copolymers with a 1,3,4-oxadiazole  
unit in the main chain

AUTHOR(S): Yang, Nam Choul; Lee, Sang Min; Yoo, Young Man;  
Kim, Jai Kyeong; Suh, Dong Hack

CORPORATE SOURCE: School of Chemical Engineering, College of  
Engineering, Hanyang University, Seoul, 133-791,  
S. Korea

SOURCE: Journal of Polymer Science, Part A: Polymer  
Chemistry (2004), 42(5), 1058-1068  
CODEN: JPACEC; ISSN: 0887-624X

PUBLISHER: John Wiley & Sons, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Novel polyfluorene copolymers alternately having an 1,3,4-oxadiazole unit in the main chain were prepared by both one-step and two-step methods for polyoxadiazole synthesis. They **displayed** highly efficient blue photoluminescence, the properties of which were affected by the extent of conjugation and the changes in the electron d. by a side chain. An electrochem. anal. of the polymers using cyclic voltammetry suggested that they could be used as electron-transport/hole-blocking materials as well as blue emission materials for polymer **light-emitting** diodes. A simple double-layer device consisting of poly(N-vinylcarbazole) as a hole-transport layer and poly[(9,9'-didodecylfluorene-2,7-diyl)-alt-((1,4-bis(1,3,4-oxadiazole)-2,5-di(2-ethylhexyloxy)phenylene)-5,5'-diyl)] as an emission layer exhibited narrow blue **electroluminescence** with a maximum at 430 nm.

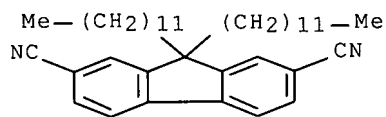
IT 388602-19-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)

(blue **electroluminescent** n-type polyfluorene copolymers  
with oxadiazole unit in main chain)

RN 388602-19-5 HCAPLUS

CN 9H-Fluorene-2,7-dicarbonitrile, 9,9-didodecyl- (9CI) (CA INDEX NAME)



CC 35-5 (Chemistry of Synthetic High Polymers)  
 ST polyfluorene oxadiazole blue **electroluminescent**  
 IT Band gap  
 Cyclic voltammetry  
**Electroluminescent devices**  
 Glass transition temperature  
 HOMO (molecular orbital)  
 LUMO (molecular orbital)  
 Luminescence  
 Luminescence, **electroluminescence**  
 Oxidation potential  
 (blue **electroluminescent** n-type polyfluorene copolymers  
 with oxadiazole unit in main chain)  
 IT Polyoxadiazoles  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (blue **electroluminescent** n-type polyfluorene copolymers  
 with oxadiazole unit in main chain)  
 IT 538366-59-5P 538366-60-8P 538366-61-9P 538366-62-0P  
 679427-40-8P 679427-41-9P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (blue **electroluminescent** n-type polyfluorene copolymers  
 with oxadiazole unit in main chain)  
 IT 143-15-7, 1-Bromododecane 5870-38-2 7803-57-8, Hydrazine  
 monohydrate 16433-88-8 18908-66-2, 2-Ethylhexylbromide  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (blue **electroluminescent** n-type polyfluorene copolymers  
 with oxadiazole unit in main chain)  
 IT 258334-85-9P 286438-45-7P **388602-19-5P** 388602-20-8P  
 679427-42-0P 679427-43-1P 679427-45-3P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (blue **electroluminescent** n-type polyfluorene copolymers  
 with oxadiazole unit in main chain)  
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L40 ANSWER 34 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2003:797100 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:17062  
 TITLE: Monodisperse Glassy-Nematic Conjugated Oligomers  
 with Chemically Tunable Polarized Light  
**Emission**  
 AUTHOR(S): Geng, Yanhou; Chen, Andrew C. A.; Ou, Jane J.;  
 Chen, Shaw H.; Klubek, Kevin; Vaeth, Kathleen  
 M.; Tang, Ching W.  
 CORPORATE SOURCE: Department of Chemical Engineering and  
 Laboratory for Laser Energetics, Center for

Optoelectronics and Imaging, University of  
Rochester, Rochester, NY, 14623-1212, USA  
Chemistry of Materials (2003), 15(23),  
4352-4360

SOURCE:

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER:

American Chemical Society

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB A novel series of monodisperse conjugated oligomers were synthesized by inserting varied segments into blue-emitting oligofluorenes to complete the color gamut of **light emission**. Quantum mech. calcns. revealed that the electron transition dipoles lie largely parallel to the long mol. axes of the central segments responsible for **light emission**. The orientational order parameter characterizing mol. alignment in thermally processed glassy-nematic films was evaluated at 0.77 to 0.87 by UV-vis absorption dichroism. With an emission dichroic ratio ranging from 9.4 to 13.7, polarized photoluminescence provided further evidence that the long mol. axes are aligned with the nematic director. Polarized organic **light-emitting** diodes (OLEDs) comprising selected materials resulted in red and yellowish green **light emission** with dichroic ratios of 14.4 and 18.0 and luminance yields of 0.51 and 5.91 cd/A, resp. These two sets of data represent the best performance to date of red and green polarized OLEDs.

IT 630426-30-1P

RL: PRP (Properties); SPN (Synthetic preparation); PREP  
(Preparation)

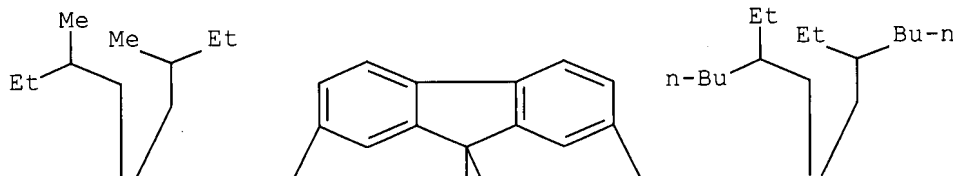
(preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

RN 630426-30-1 HCAPLUS

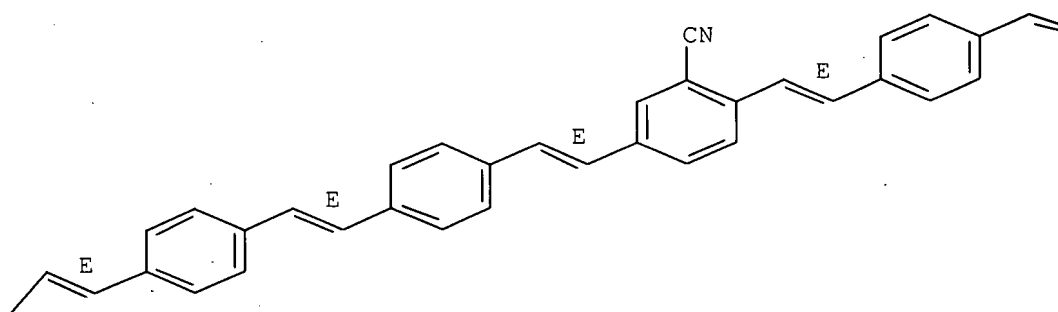
CN Benzonitrile, 2,5-bis[(1E)-2-[4-[(1E)-2-[4-[(1E)-2-[9,9-bis(2-ethylhexyl)-9',9'',9''',9''''-tetrakis(2-methylbutyl)[2,2':7',2''-ter-9H-fluoren]-7-yl]ethenyl]phenyl]ethenyl]phenyl]ethenyl]- (9CI) (CA  
INDEX NAME)

Double bond geometry as shown.

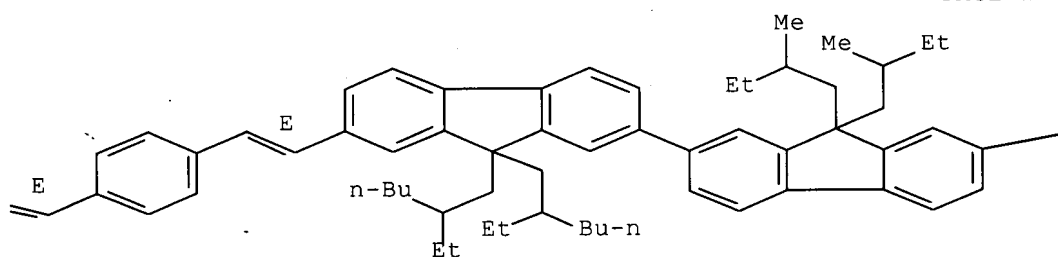
PAGE 1-A



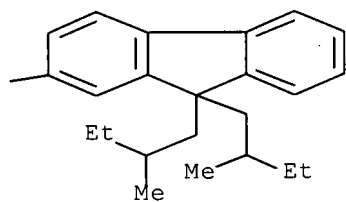
PAGE 1-B



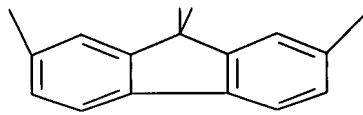
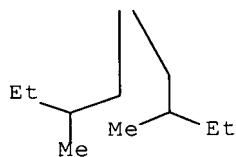
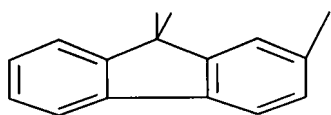
PAGE 1-C



PAGE 1-D



PAGE 2-A



CC 35-5 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 25, 36, 73, 76

ST fluorene conjugated oligomer prepn polarized **light emission** photoluminescence

IT Polymers, preparation  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (conjugated, oligomeric; preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

IT **Electroluminescent devices**  
 (displays; preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

IT Luminescent **screens**  
 (electroluminescent; preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

IT Polymer chains  
 (orientation; preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

IT Electrooptical materials  
 Glass transition temperature  
 Light  
 Luminescence  
 Luminescence, **electroluminescence**  
 Optical absorption  
 Phase transition temperature  
 (preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

IT 491880-82-1P 630425-88-6P 630425-89-7P 630426-32-3P  
 630426-33-4P 630426-34-5P 630426-35-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (intermediate; preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

IT 630425-85-3P 630425-86-4P 630426-29-8P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

IT 630425-87-5P 630426-27-6P 630426-28-7P **630426-30-1P**  
 630426-31-2P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

IT 105-06-6, 1,4-Divinylbenzene 4805-22-5 454702-29-5 491880-61-6  
 491880-64-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (starting material; preparation and properties of monodisperse glassy-nematic conjugated oligofluorenes with chemical tunable polarized **light emission**)

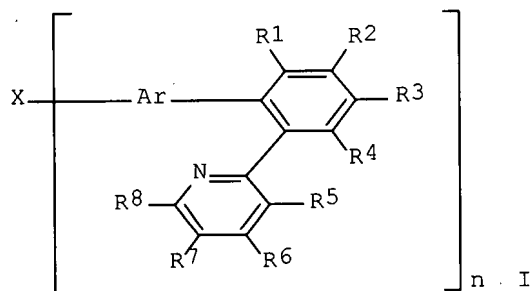
REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE



FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L40 ANSWER 35 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2003:773843 HCAPLUS Full-text  
 DOCUMENT NUMBER: 139:298985  
 TITLE: Organic **electroluminescent**  
**device** and **display** with phenyl  
 pyridine derivative  
 INVENTOR(S): Kita, Hiroshi; Yamada, Taketoshi; Matsuura,  
 Mitsunobu; Inoue, Yoshio; Oi, Shuichi; Takayama,  
 Shoichi  
 PATENT ASSIGNEE(S): Konica Co., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003282270	A	20031003	JP 2002-82918	200203 25
			<--	
JP 3925265	B2	20070606	JP 2002-82918	200203 25
PRIORITY APPLN. INFO.:				
			<--	
OTHER SOURCE(S):	MARPAT 139:298985			
GI				



AB The invention refers to an organic **electroluminescent device** comprising at least one Ph pyridine compound I [Z = n-valent bridging group or single bond; Ar = divalent arylene; R1-8 - H or substituent wherein adjacent groups may join to form rings; n = 2 - 6].

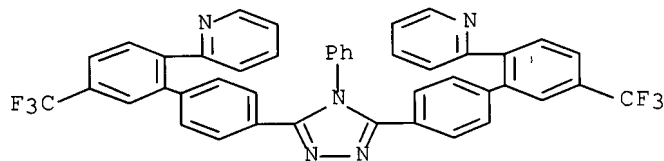
IT 608145-76-2

RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent device** and

**display** with Ph pyridine derivative)

RN 608145-76-2 HCAPLUS

CN Pyridine, 2,2'-[(4-phenyl-4H-1,2,4-triazole-3,5-diyl)bis[5-(trifluoromethyl)[1,1'-biphenyl]-4',2-diyl]]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS C09K011-06; H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent display device**  
phenyl pyridine

IT **Electroluminescent devices**  
(displays; organic **electroluminescent device** and **display** with Ph pyridine derivative)

IT **Luminescent screens**  
(**electroluminescent; organic electroluminescent device** and **display** with Ph pyridine derivative)

IT 474304-10-4 608145-69-3 608145-70-6 608145-72-8 608145-73-9  
608145-74-0 608145-75-1 **608145-76-2** 608145-77-3  
608145-78-4 608145-79-5 608145-80-8 608145-81-9 608145-82-0  
608145-83-1 608145-84-2 608145-85-3 608145-86-4 608145-87-5  
608145-88-6 608145-89-7 608145-90-0 608145-91-1 608145-92-2

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** and **display** with Ph pyridine derivative)

L40 ANSWER 36 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:738070 HCAPLUS Full-text

DOCUMENT NUMBER: 139:267727

TITLE: Fluorinated organic **electroluminescent device** for long lifetimes

INVENTOR(S): Kamatani, Jun; Okada, Shinjiro; Tsuboyama, Akira; Takiguchi, Takao; Miura, Seishi; Moriyama, Takashi; Igawa, Satoshi; Furugori, Manabu; Iwawaki, Hironobu

PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan

SOURCE: PCT Int. Appl., 39 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2003077609	A1	20030918	WO 2003-JP2693	

200303

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,  
 CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,  
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,  
 LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
 NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL,  
 TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
 ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,  
 BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
 EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG

AU 2003211786

A1

20030922

AU 2003-211786

200303

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US 2003189216

A1

20031009

US 2003-424918

200304

29

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US 6812497

B2

20041102

US 2005037236

A1

20050217

US 2004-947152

200409

23

&lt;--

PRIORITY APPLN. INFO.:

JP 2002-63703

A

200203

08

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WO 2003-JP2693

W

200303

07

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US 2003-424918

A3

200304

29

&lt;--

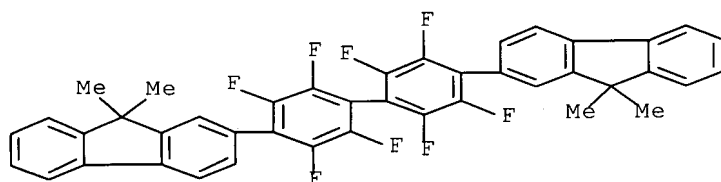
AB The invention refers to an organic **electroluminescent device**, suitable for use in  
**flat panel displays** and light sources, comprising a 1st organic layer with a  
 fluorine-containing compound and a 2nd organic layer as emitting layers.

IT 479408-26-9

RL: DEV (Device component use); USES (Uses)  
 (fluorinated organic **electroluminescent device**  
 for long lifetimes)

RN 479408-26-9 HCAPLUS

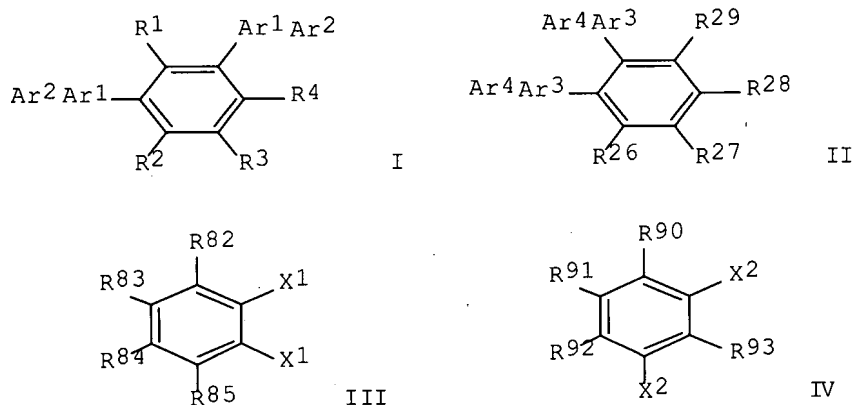
CN 9H-Fluorene, 2,2'-(2,2',3,3',5,5',6,6'-octafluoro[1,1'-biphenyl]-  
 4,4'-diyl)bis[9,9-dimethyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS H05B033-22; C09K011-06  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74  
ST **electroluminescent display device**  
fluorinated org  
IT **Electroluminescent devices**  
(displays; fluorinated organic **electroluminescent device** for long lifetimes)  
IT Luminescent **screens**  
(**electroluminescent**; fluorinated organic **electroluminescent device** for long lifetimes)  
IT 52501-25-4 479408-26-9 602331-42-0  
602331-43-1 602331-44-2 603126-17-6  
603126-19-8 855699-88-6  
RL: DEV (Device component use); USES (Uses)  
(fluorinated organic **electroluminescent device** for long lifetimes)  
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L40 ANSWER 37 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2003:374063 HCAPLUS Full-text  
DOCUMENT NUMBER: 138:376534  
TITLE: Aromatic **electroluminescent** materials,  
blue- to bluish purple-emitting  
**electroluminescent devices**,  
and **display devices**  
INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Suzurizato,  
Yoshiyuki; Kita, Hiroshi  
PATENT ASSIGNEE(S): Konica Co., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 69 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003142267	A	20030516	JP 2001-353126	20011119
			<--	
JP 3873720	B2	20070124		
PRIORITY APPLN. INFO.:			JP 2001-254073	A 20010824
			<--	
OTHER SOURCE(S):		MARPAT 138:376534		
GI				



AB Organic **electroluminescent** materials I, II, III, or IV (R1-4, R9, R26-29, R34 = H, (un)substituted alkyl, cycloalkyl, alkoxy, halogen; R5-8, R30-33 = H, substitution group; neighboring groups of R5-9, R30-34 may form ring; R82-85 = H, (un)substituted alkyl, cycloalkyl, alkoxy, aryl, halogen; Ar1, Ar3 = divalent aromatic hydrocarbon; Ar2 = C6R5R6R7R8R9; Ar4 = CR3OR31R32R33R34; X1 = C6R86Ar8R87R88R89; X2 = CR94Ar9R95R96R97; R86, R94 = alkyl, alkoxy, halogen; R87-89, R90-93, R95-97 = H, alkyl, alkoxy, (un)substituted aryl, halogen; Ar8-9 = aromatic hydrocarbon) and **electroluminescent devices** containing I, II, III, or IV are claimed. The devices may also contain phosphorescent compds. to give out **electroluminescence** of longer wavelength than the maximum fluorescence wavelength of I-IV. **Display** device equipped with multiple nos. of the **electroluminescent devices** is also claimed. Devices giving out blue to bluish purple emission are obtained.

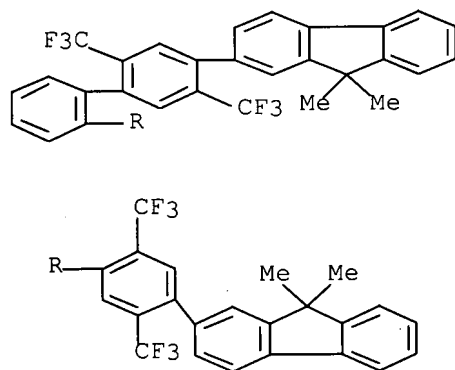
IT 522630-26-8

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(aromatic **electroluminescent** materials showing blue- to bluish purple emission for **display** devices)

RN 522630-26-8 HCAPLUS

CN 9H-Fluorene, 2,2'-(2,2'',5,5''-tetrakis(trifluoromethyl)[1,1':2',1''-terphenyl]-4,4''-diyl)bis[9,9-dimethyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-12; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and

Other Reprographic Processes)

Section cross-reference(s): 25

- ST **electroluminescent device** arom fluorescent  
compd; blue emission arom **electroluminescent**  
**device; display app org**  
**electroluminescent device**
- IT **Electroluminescent devices**  
Fluorescent substances  
Optical imaging **devices**  
(aromatic **electroluminescent** materials showing blue- to  
bluish purple emission for **display** devices)
- IT 5660-43-5P 522630-06-4P  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES  
(Uses)  
(aromatic **electroluminescent** materials showing blue- to  
bluish purple emission for **display** devices)
- IT 522630-08-6 522630-09-7 522630-10-0 522630-11-1 522630-12-2  
522630-13-3 522630-15-5 522630-16-6 522630-17-7 522630-18-8  
522630-19-9 522630-21-3 522630-24-6 **522630-26-8**  
522630-27-9 522630-28-0 522630-29-1 522630-30-4 522630-31-5  
522630-32-6 522630-33-7 522630-34-8 522630-35-9 522630-36-0  
522630-37-1 522630-38-2 522630-39-3 522630-40-6  
RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)  
(aromatic **electroluminescent** materials showing blue- to  
bluish purple emission for **display** devices)
- IT 522630-07-5P  
RL: IMF (Industrial manufacture); TEM (Technical or engineered  
material use); PREP (Preparation); USES (Uses)  
(aromatic **electroluminescent** materials showing blue- to  
bluish purple emission for **display** devices)
- IT 604-53-5P, 1,1'-Binaphthalene 5122-94-1P 49610-33-5P  
103989-84-0P 363607-69-6P 522630-41-7P 522630-42-8P  
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(aromatic **electroluminescent** materials showing blue- to  
bluish purple emission for **display** devices)
- IT 90-11-9, 1-Bromonaphthalene 92-66-0, 4-Bromobiphenyl 106-37-6,  
1,4-Dibromobenzene 108-36-1, 1,3-Dibromobenzene 583-53-9,  
1,2-Dibromobenzene 2586-62-1, 1-Bromo-2-methylnaphthalene  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(aromatic **electroluminescent** materials showing blue- to  
bluish purple emission for **display** devices)

L40 ANSWER 38 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:423034 HCAPLUS Full-text

DOCUMENT NUMBER: 137:13334

TITLE: Organic **electroluminescent** materials  
and **devices** for **display**  
devices and their back lights

INVENTOR(S): Sue, Morotaka; Sasabe, Hiroyuki; Horinouchi,  
Akira; Kubo, Takashi

PATENT ASSIGNEE(S): Nippon Aleph Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	----	-----	
JP 2002161270	A	20020604	JP 2000-359043	200011 27

PRIORITY APPLN. INFO.:

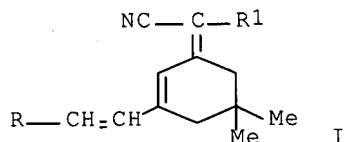
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JP 2000-359043

200011  
27

OTHER SOURCE(S):      MARPAT 137:13334

GI



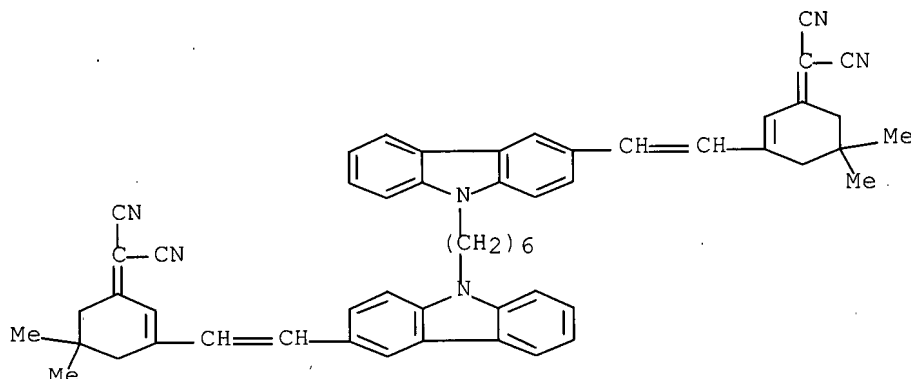
AB    Organic **electroluminescent** materials showing intramol. 1-dimensional charge-transfer mechanisms are claimed. Preferable Markush structures I [R = donor group, R1 = CN, CO2Et, CH(p-C6H4CN)] for the materials are also claimed. Organic **electroluminescent devices** including  $\geq 1$  **light-emitting** layers containing the materials showing intramol. 1-dimensional charge-transfer mechanisms are also claimed. Organic **electroluminescent devices** may be manufactured at low cost.

IT    431948-06-0

RL: TEM (Technical or engineered material use); USES (Uses)  
 (organic **electroluminescent** materials with intramol.  
 1-dimensional charge-transfer mechanisms for use in  
**display** devices)

RN    431948-06-0    HCAPLUS

CN    Propanedinitrile, 2,2'-[1,6-hexanediylbis[9H-carbazole-9,3-diyl-2,1-ethenediyl(5,5-dimethyl-2-cyclohexen-3-yl-1-ylidene)]]bis- (9CI)  
 (CA INDEX NAME)



IC    ICM    C09K011-06  
       ICS    C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 25, 27, 73

ST charge transfer linear compd **electroluminescent** material

IT **Luminescent** substances  
 (electroluminescent; organic  
 electroluminescent materials with intramol. 1-dimensional  
 charge-transfer mechanisms for use in **display** devices)

IT **Electroluminescent devices**  
 (organic **electroluminescent** materials with intramol.  
 1-dimensional charge-transfer mechanisms for use in  
**display** devices)

IT 51325-91-8 431948-06-0  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (organic **electroluminescent** materials with intramol.  
 1-dimensional charge-transfer mechanisms for use in  
**display** devices)

L40 ANSWER 39 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:229711 HCAPLUS Full-text

DOCUMENT NUMBER: 137:13164

TITLE: Polymers for holographic imaging and  
**displays**

AUTHOR(S): Kippelen, Bernard; Domercq, Benoit; Herlocker,  
 Jon A.; Hrera, Richard D.; Haddock, Joshua N.;  
 Fuentes-Hernandez, Canek; Ramos-Ortiz, Gabriel;  
 Blanche, Pierre A.; Peyghambarian, Nasser;  
 Schulzgen, Axel; Zhang, Yadong; Marder, Seth R.

CORPORATE SOURCE: Optical Sci. Center, Univ. Arizona, Tucson, AZ,  
 85721, USA

SOURCE: Polymer Preprints (American Chemical Society,  
 Division of Polymer Chemistry) (2002),  
 43(1), 158-159  
 CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer  
 Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB Several novel photorefractive polymers that are sensitized by two-photon  
 absorption have been developed. Holog. recording via four-wave mixing was  
 performed in photorefractive polymer composite which consists of  
 poly(vinylcarbazole) photoconducting matrix, an electroactive chromophore, N-  
 ethylcarbazole and benzylbutyl phthalate plasticizers. Photorefractive polymers  
 were also fabricated by injection molding, demonstrating the possible mass-  
 production of such materials using standard plastic processing techniques. The  
 material for injection-molding consists of OZ-1330, 2,N,N-dihexylamino-7-  
 dicyanomethylidenenyl-3,4,5,6,10- pentahydronaphthalene, (2,4,7-trinitro-9-  
 fluorenylidene)malonitrile sensitizer and di-Ph isophthalate plasticizer. Non-  
 destructive read-out was achieved by recording holograms with high intensity  
 femtosecond pulses and by reading them out with low power continuous wave beams at  
 the same wavelength. Efficient and stable organic **light-emitting** diodes were  
 fabricated with novel substituted photocrosslinkable hole transport polymers based  
 upon copolymn. of substituted bis(diarylamino)biphenyl acrylate monomers and  
 cinnamate acrylate .

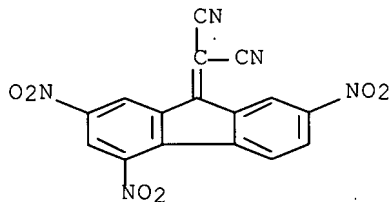
IT 1172-02-7  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (sensitizer; holog. photorefractive polymer composite sensitized  
 by two-photon absorption for injection molding)

RN 1172-02-7 HCAPLUS

CN Propanedinitrile, 2-(2,4,7-trinitro-9H-fluoren-9-ylidene)- (CA



INDEX NAME)



- CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 35, 73
- ST photorefractive polymer composite two photon absorption holog imaging **display**; injection molding photorefractive polymer holog recording; photocrosslinkable hole transport polymer photoimaging **light emitting** diode fabrication
- IT Crosslinking  
(photochem.; photocrosslinkable hole transport polymers sensitized by two-photon absorption for holog. fabrication of **light-emitting** diodes)
- IT **Electroluminescent devices**  
Photoimaging materials  
Photolithography  
(photocrosslinkable hole transport polymers sensitized by two-photon absorption for holog. fabrication of **light-emitting** diodes)
- IT Four wave mixing  
Holographic recording materials  
Photorefractive materials  
(photorefractive polymers and composites sensitized by two-photon absorption for holog. imaging and **displays**)
- IT Two-photon absorption  
(photorefractive polymers sensitized by two-photon absorption for holog. imaging and **displays**)
- IT 50926-11-9, ITO  
RL: DEV (Device component use); USES (Uses).  
(anode; photocrosslinkable hole transport polymers sensitized by two-photon absorption for holog. fabrication of **light-emitting** diodes)
- IT 37271-44-6  
RL: DEV (Device component use); USES (Uses)  
(cathode; photocrosslinkable hole transport polymers sensitized by two-photon absorption for holog. fabrication of **light-emitting** diodes)
- IT 433716-27-9 433716-28-0 433716-29-1 433716-30-4  
RL: NUU (Other use, unclassified); USES (Uses)  
(monomer; photoimaging composition using photocrosslinkable hole transport polymers for fabrication of **light-emitting** diodes)
- IT 433716-31-5  
RL: TEM (Technical or engineered material use); USES (Uses)  
(photocrosslinkable hole transport polymers sensitized by two-photon absorption for fabrication of **light-emitting** diodes)
- IT 2085-33-8, AlQ3

RL: DEV (Device component use); USES (Uses)  
 (photocrosslinkable hole transport polymers sensitized by  
 two-photon absorption for holog. fabrication of **light-**  
**emitting diodes**)

IT 1172-02-7

RL: TEM (Technical or engineered material use); USES (Uses)  
 (sensitizer; holog. photorefractive polymer composite sensitized  
 by two-photon absorption for injection molding)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN  
 THE RE FORMAT

L40 ANSWER 40 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:27766 HCAPLUS Full-text

DOCUMENT NUMBER: 136:110193

TITLE: Red-emitting organic **electroluminescent**  
**devices** with high electric energy  
 conversion efficiency and color purity

INVENTOR(S): Tominaga, Takeshi; Murase, Seiichiro; Kohama,  
 Toru

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002008863	A	20020111	JP 2000-184269	200006 20

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PRIORITY APPLN. INFO.:

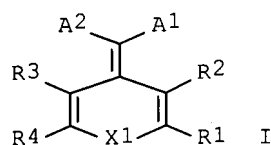
JP 2000-184269

200006  
20

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OTHER SOURCE(S): MARPAT 136:110193

GI



AB The devices having emission peak at 580-720 nm, contain fluorescent substances having fluorescent peak at 540-720 nm and I [A1,2 = electron-withdrawing group, aromatic heterocycle; X1 = O, S, (un)substituted N; R1-4 = H, alkyl, alkoxy, halo, aryl, aralkyl, alkenyl, arylether, heterocycle, cyano, aldehyde, carbonyl, ester, carbamoyl, amino, condensed ring (formed with adjacent substituent) selected from aromatic, aliphatic, or heterocyclic ring; ≥1 R1-4 = Me7C:CR5R6; R5-7 = same as R1-4], which may be dopants, between anodes and cathodes. The compds. may have

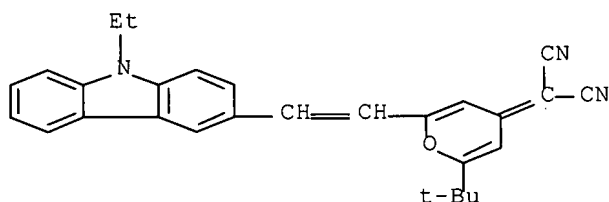
polar groups, vinyl groups, aromatic rings, and/or heterocyclic rings. The devices are useful for matrix-type **displays** (e.g., computers, televisions) and segment-type **displays** (e.g., clocks, thermometers).

IT 388093-02-5

RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(dopant; red-emitting organic **electroluminescent devices** containing heterocyclic dopants with high elec. energy conversion efficiency and color purity)

RN 388093-02-5 HCAPLUS

CN Propanedinitrile, [2-(1,1-dimethylethyl)-6-[2-(9-ethyl-9H-carbazol-3-yl)ethenyl]-4H-pyran-4-ylidene]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C07C211-61; C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST red emitting org **electroluminescent device display**; condensed heterocyclic compd dopant red LED; phenylquinolinolato host LED active matrix **display**

IT **Electroluminescent devices**

(red-emitting; red-emitting organic **electroluminescent devices** containing heterocyclic dopants with high elec. energy conversion efficiency and color purity)

IT 50926-11-9, ITO

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(anode; red-emitting organic **electroluminescent devices** containing heterocyclic dopants with high elec. energy conversion efficiency and color purity)

IT 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses 7440-22-4, Silver, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(cathode; red-emitting organic **electroluminescent devices** containing heterocyclic dopants with high elec. energy conversion efficiency and color purity)

IT 388093-01-4 388093-02-5

RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(dopant; red-emitting organic **electroluminescent devices** containing heterocyclic dopants with high elec. energy conversion efficiency and color purity)

IT 82953-57-9 96159-17-0 135749-33-6 145983-47-7 162845-44-5 184679-91-2 362623-43-6, Tris(5,7-diphenyl-8-

quinolinolato)aluminum 388092-92-0 388119-20-8

RL: DEV (Device component use); TEM (Technical or engineered

material use); USES (Uses)

(host material; red-emitting organic **electroluminescent devices** containing heterocyclic dopants with high elec. energy conversion efficiency and color purity)

IT 65181-78-4, TPD

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(pos. hole-transporting agent; red-emitting organic **electroluminescent devices** containing heterocyclic dopants with high elec. energy conversion efficiency and color purity)

L40 ANSWER 41 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:886783 HCAPLUS Full-text

DOCUMENT NUMBER: 136:29262

TITLE: Organic **electroluminescent display device** and chemical

compounds for liquid crystals

INVENTOR(S): Kido, Junji; Nakada, Hitoshi; Tohma, Teruo;

Murayama, Ryuji; Yuki, Toshinao

PATENT ASSIGNEE(S): Tohoku Pioneer Corporation, Japan

SOURCE: U.S. Pat. Appl. Publ., 22 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

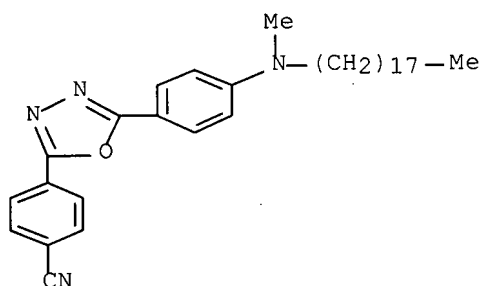
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2001048982	A1	20011206	US 2001-844151	200104 27
			<--	
JP 2002025779	A	20020125	JP 2001-130527	200104 27
			<--	
US 2004043252	A1	20040304	US 2003-650361	200308 28
			<--	
US 7195826	B2	20070327		
US 2007164257	A1	20070719	US 2007-706590	200702 15
			<--	
PRIORITY APPLN. INFO.:			JP 2000-128766	A 200004 28
			<--	
			US 2001-844151	A1 200104 27
			<--	
			US 2003-650361	A3 200308 28
			<--	

- AB The new organic **electroluminescent display device** has a carrier-transporting layer and/or an **organic luminous** layer composed of a nematic liquid crystal or a liquid crystal dispersing a carrier-transporting low-mol. therein. When the **organic luminous** layer is to be bestowed with faculty as a liquid crystal, it is made of a nematic liquid crystal. Both the carrier-transporting layer and the **organic luminous** layer may be bestowed with faculty as a liquid crystal. Since the liquid crystal is incorporated in the carrier-transporting layer and/or the **organic luminous** layer, the **display device** can be driven as a liquid crystal **display device** in a dark place by charging with a voltage lower than a **light emission** initiating potential. Of course, it is driven as an **electroluminescent display device** when it is charged with a voltage higher than the **light emission** initiating potential. Use of an **electroluminescent** liquid crystal as an **organic luminous** layer enables omission of a carrier-transporting layer.
- IT 378223-62-2P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation of organic **electroluminescent** liquid crystals for **display device**)
- RN 378223-62-2 HCAPLUS
- CN Benzonitrile, 4-[5-[4-(methyloctadecylamino)phenyl]-1,3,4-oxadiazol-2-yl]- (9CI) (CA INDEX NAME)



- IC ICM C09K019-38  
 ICS C09K019-32
- INCL 428001100
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 38, 75
- ST org **electroluminescent display** nematic liq crystal
- IT **Electroluminescent devices**  
 (organic chemical compds. and liquid crystals for)
- IT Liquid crystal **displays**  
 (organic **electroluminescent** compds. and chemical compds. for)
- IT 25067-59-8, Polyvinylcarbazole 38215-36-0 50851-57-5  
 65181-78-4 126213-51-2, PEDOT  
 RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent display device** and chemical compds. for liquid crystals)
- IT 138184-36-8  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (organic luminous substance; organic **electroluminescent display device** and chemical compds. for liquid crystals)
- IT 195375-07-6P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP

- (Preparation); USES (Uses)  
 (preparation of bipolar carrier-transporting liq crystal for organic  
**electroluminescent display device**)
- IT 15231-91-1, 6-Bromo-2-naphthol 51554-93-9 61676-62-8  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of bipolar carrier-transporting liq crystal for organic  
**electroluminescent display device**)
- IT 212079-31-7P 378223-65-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation of bipolar carrier-transporting liq crystal for organic  
**electroluminescent display device**)
- IT 378223-58-6P 378223-59-7P 378223-64-4P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (preparation of carrier-transporting liq crystal for organic  
**electroluminescent display device**)
- IT 86-74-8, 9H-Carbazole 531-91-9 540-38-5, p-Iodophenol 629-27-6  
 4292-19-7, 1-Iodo dodecane 29558-77-8  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of carrier-transporting liq crystal for organic  
**electroluminescent display device**)
- IT 58743-82-1P 116223-57-5P 138567-33-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation of carrier-transporting liq crystal for organic  
**electroluminescent display device**)
- IT 18908-66-2, 3-Bromomethyl heptane 19692-45-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of organic **electroluminescent** compound for liquid  
 crystal **display device**)
- IT 150-76-5P 146370-51-6P 146370-52-7P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation of organic **electroluminescent** compound for liquid  
 crystal **display device**)
- IT 378223-62-2P 378223-63-3P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (preparation of organic **electroluminescent** liquid crystals for  
**display device**)
- IT 90-33-5 143-15-7, 1-Bromo dodecane 623-00-7, 4-Bromo  
 benzonitrile 2439-55-6, N-Methyl octadecylamine 6068-72-0,  
 4-Cyanobenzoyl chloride 26628-22-8, Sodium azide  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of organic **electroluminescent** liquid crystals for  
**display device**)
- IT 85389-89-5P 274677-41-7P 378223-60-0P 378223-61-1P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation of organic **electroluminescent** liquid crystals for  
**display device**)

L40 ANSWER 42 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:603530 HCAPLUS Full-text

DOCUMENT NUMBER: 135:187795

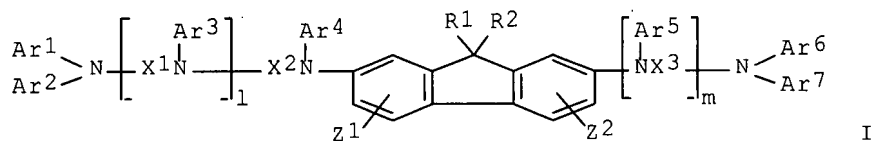
TITLE: New amine compound for organic  
**electroluminescent device**  
 showing longer luminescent lifetime and  
 excellent durability

INVENTOR(S): Shimamura, Takehiko; Nakatsuka, Masakatsu;  
Ishida, Tsutomu  
PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 75 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001226331	A	20010821	JP 2000-34477	20000214

PRIORITY APPLN. INFO.: <-- JP 2000-34477 20000214

OTHER SOURCE(S): MARPAT 135:187795  
GI



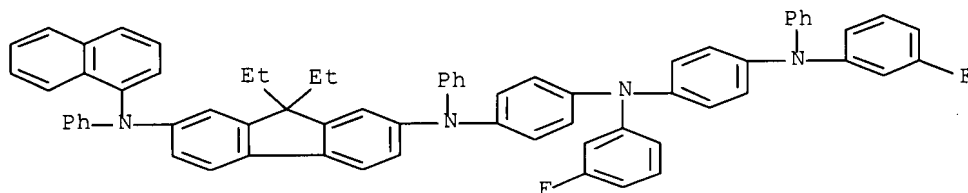
AB The new amine compound is represented by a general formula I (Ar1-7 = aryl; R1, R2 = H, alkyl, aryl, aralkyl; Z1, Z2 = H, halo, alkyl, alkoxy, aryl; X1-3 = arylene; 1, m = 0, 1) and synthesized. The amine compound is suitable as a pos. hole injection transport material in an organic **electroluminescent display device**.

IT 354987-34-1

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(amine compound for organic **electroluminescent device** showing longer luminescent lifetime and excellent durability)

RN 354987-34-1 HCAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-diethyl-N-[4-[(3-fluorophenyl)[4-[(3-fluorophenyl)phenylamino]phenyl]amino]phenyl]-N'-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM C07C211-61  
ICS C07C217-94; C07D209-86; C07D213-74; C07D265-38; C07D279-26;  
C07D333-36; C09K011-06; H05B033-14; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 73

ST amine compd synthesis pos hole injection transport material;  
**electroluminescent display device** amine  
compd charge transport material

IT **Electroluminescent devices**  
(amine compound for organic **electroluminescent**  
**device** showing longer luminescent lifetime and excellent  
durability)

IT 354987-33-0 **354987-34-1** 354987-35-2 354987-37-4  
354987-38-5 354987-40-9 354987-41-0 354987-44-3 354987-45-4  
354987-48-7 354987-49-8 354987-51-2 354987-53-4 354987-54-5  
354987-56-7 **354987-57-8** 354987-59-0 354987-60-3  
354987-61-4 354987-63-6 354987-64-7 354987-65-8 354987-66-9  
354987-69-2 354987-70-5 354987-72-7 **354987-73-8**  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(amine compound for organic **electroluminescent**  
**device** showing longer luminescent lifetime and excellent  
durability)

IT 354987-31-8P 354987-32-9P **354987-36-3P** 354987-39-6P  
354987-42-1P 354987-43-2P 354987-46-5P 354987-47-6P  
354987-50-1P 354987-52-3P 354987-55-6P 354987-58-9P  
354987-62-5P 354987-67-0P 354987-71-6P  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)  
(amine compound for organic **electroluminescent**  
**device** showing longer luminescent lifetime and excellent  
durability)

IT 74-31-7 106-37-6, 1,4-Dibromobenzene 3001-15-8,  
4,4'-Diiodobiphenyl 19606-98-5 138417-49-9 144981-86-2,  
2,7-Diiodo-9,9-dimethyl-9H-fluorene 195443-34-6 280113-41-9  
302579-18-6 308144-59-4 308144-63-0, 2-(N,N-Diphenylamino)-9,9-  
dimethyl-7-iodo-9H-fluorene 329180-34-9 354987-74-9  
354987-75-0 **354987-76-1** 354987-77-2 354987-78-3  
354987-79-4 354987-80-7 354987-81-8 354987-82-9 354987-83-0  
354987-84-1 354987-85-2 354987-86-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(synthesis of amine compound for organic **electroluminescent**  
**device** showing longer luminescent lifetime and excellent  
durability)

L40 ANSWER 43 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:417096 HCAPLUS Full-text

DOCUMENT NUMBER: 135:26976

TITLE: Fluorescent carbazole derivative providing  
600-700 nm light for **electroluminescent**  
**display device**

INVENTOR(S): Nakaya, Tadao; Yamauchi, Takao; Tajima, Akio;  
Mouri, Hidemasa

PATENT ASSIGNEE(S): Taiho Industries, Co., Ltd., Japan

SOURCE: PCT Int. Appl., 84 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

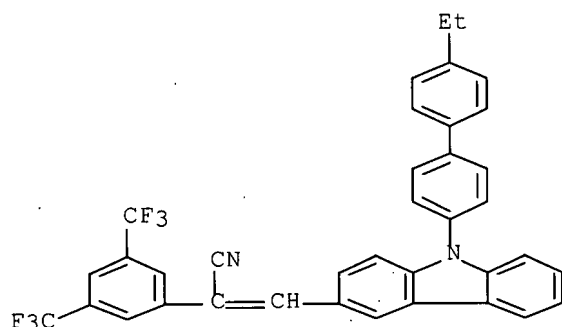
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:



PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001040401	A1	20010607	WO 2000-JP8471	20001130
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W: CA, CN, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2001220578	A	20010814	JP 2000-186941	20000621
<--				
TW 255846	B	20060601	TW 2000-89125597	20001201
<--				
US 2003023099	A1	20030130	US 2001-889591	20010928
<--				
US 6528657	B2	20030304	JP 1999-343928	A 19991202
PRIORITY APPLN. INFO.:				
<--				
JP 2000-186941				
<--				
WO 2000-JP8471				
<--				
AB	The substance is a novel fluorescent carbazole derivative having a carbazole ring skeleton which has an electron-donating group and an electron-attracting group resp. bonded to the nitrogen atom and the 3-position carbon atom. The luminescent substance is easily produced at low cost and 600-700 nm luminescent light.			
IT	343327-00-4			
	RL: RCT (Reactant); RACT (Reactant or reagent) (novel fluorescent carbazole derivative)			
RN	343327-00-4 HCAPLUS			
CN	Benzeneacetonitrile, $\alpha$ -[[9-(4'-ethyl[1,1'-biphenyl]-4-yl)-9H-carbazol-3-yl]methylene]-3,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)			



IC C09K011-06  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 27  
 ST fluorescent carbazole deriv providing **electroluminescent**  
 IT Phosphors  
 (electroluminescent; novel fluorescent carbazole  
 derivative)  
 IT **Electroluminescent devices**  
 (novel fluorescent carbazole derivative)  
 IT 68-12-2, N,N-Dimethylformamide, reactions 80-41-1, 2-Chloroethyl  
 p-toluenesulfonate 86-74-8, Carbazole 105-56-6, Ethyl  
 cyanoacetate 109-77-3, Malononitrile 624-31-7, 4-Iodotoluene  
 696-62-8, 4-Iodoanisole 2338-75-2, (4-  
 Trifluoromethyl)phenylacetonitrile 5707-44-8, 4-Ethylbiphenyl  
 7553-56-2, Iodine, reactions 7570-45-8, N-Ethylcarbazole-3-  
 carboxaldehyde 19264-73-4 53167-75-2 85068-32-2 243666-13-9  
**343327-00-4**  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (novel fluorescent carbazole derivative)  
 IT 917-61-3P, Sodium cyanate 1140-35-8P, N-(2-Chloroethyl)carbazole  
 17078-76-1P, 4-Iodo-4'-ethylbiphenyl 19264-74-5P,  
 N-(4-Methoxyphenyl)carbazole 54117-40-7P 79894-25-0P  
 84746-66-7P 84746-67-8P 122376-76-5P 123770-87-6P  
 129180-07-0P 343326-78-3P 343326-79-4P 343326-80-7P  
 343326-81-8P 343326-83-0P **343326-84-1P**  
**343326-86-3P 343326-87-4P 343326-88-5P**  
**343326-89-6P 343326-90-9P 343326-91-0P**  
 343326-92-1P 343326-93-2P 343326-94-3P 343326-96-5P  
 343326-97-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (novel fluorescent carbazole derivative)  
 IT 58293-59-7P 240800-44-6P 343326-82-9P **343326-85-2P**  
**343326-95-4P 343326-98-7P 343326-99-8P**  
**343327-01-5P 343327-02-6P**  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)  
 (novel fluorescent carbazole derivative)  
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

DOCUMENT NUMBER: 133:24764  
 TITLE: Organic **electroluminescent display devices** with high luminance and efficient **light emission**  
 INVENTOR(S): Onikubo, Shunichi; Tamano, Michiko  
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2000150152	A	20000530	JP 1998-324629	199811 16

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PRIORITY APPLN. INFO.: JP 1998-324629  
 199811  
 16

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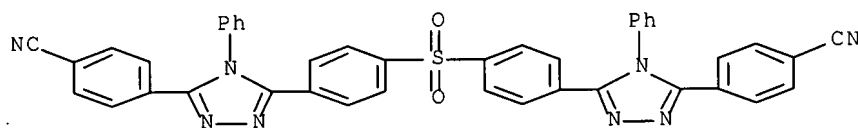
AB The **device** comprises a multicolored **light-emitting** layer and either or both of hole- and electron-injection layer(s) sandwiched in between a pair of electrodes. The **light-emitting** layer comprises multiple **light-emitting** regions having different colors and the hole- or the electro-injection layer is formed entirely on the **light-emitting** layer. Preferable compds. for each of the layers are given. Devices showing constant emission of each color are obtained.

IT 272116-88-8

RL: DEV (Device component use); USES (Uses)  
 (electron-injection layer; **electroluminescent display devices** with high luminance and uniform emission of each colors)

RN 272116-88-8 HCAPLUS

CN Benzonitrile, 4,4'-[sulfonylbis[4,1-phenylene(4-phenyl-4H-1,2,4-triazole-3,5-diyl)]]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-12

ICS G09F009-30; H05B033-14; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST **electroluminescent display** multicolored  
**light emitting** layer; hole injection layer  
**electroluminescent display device**;  
 electron injection layer **electroluminescent display device**

IT **Electroluminescent devices**

(**electroluminescent display devices**  
 with high luminance and uniform emission of each colors)

- IT 198-55-0, Perylene 4061-32-9 146162-54-1 158604-97-8  
 194296-06-5 213968-34-4 244280-90-8 271777-31-2 271777-32-3  
 271777-33-4  
 RL: DEV (Device component use); USES (Uses)  
 (blue light-emitting;  
**electroluminescent display devices**  
 with high luminance and uniform emission of each colors)
- IT 58280-31-2  
 RL: DEV (Device component use); USES (Uses)  
 (electron-injection layer and blue light-  
**emitting layer; electroluminescent**  
**display devices** with high luminance and uniform  
 emission of each colors)
- IT 2085-33-8, Tris(8-hydroxyquinolino)aluminum  
 RL: DEV (Device component use); USES (Uses)  
 (electron-injection layer and green light-  
**emitting layer; electroluminescent**  
**display devices** with high luminance and uniform  
 emission of each colors)
- IT 146162-49-4 150405-69-9 188049-36-7 188049-37-8 188049-39-0  
 188049-41-4 213620-77-0 221554-51-4 272116-82-2  
 272116-88-8 272122-21-1  
 RL: DEV (Device component use); USES (Uses)  
 (electron-injection layer; **electroluminescent**  
**display devices** with high luminance and uniform  
 emission of each colors)
- IT 19205-19-7, N,N'-Dimethylquinacridone 38215-36-0, Coumarin 6  
 113933-87-2 177799-15-4 177799-16-5 189263-86-3 219596-73-3  
 220720-18-3  
 RL: DEV (Device component use); USES (Uses)  
 (green light-emitting;  
**electroluminescent display devices**  
 with high luminance and uniform emission of each colors)
- IT 147-14-8, Copper phthalocyanine 574-93-6, Phthalocyanine  
 808-57-1, 2,3,6,7,10,11-Hexamethoxytriphenylene 32829-11-1  
 58473-78-2, 1,1-Bis[4-(di-p-tolylamino)phenyl]cyclohexane  
 65181-78-4 76185-65-4 123847-85-8 124729-98-2 151026-65-2  
 166444-98-0 208939-03-1 244281-07-0 272117-02-9 272117-03-0  
 RL: DEV (Device component use); USES (Uses)  
 (hole-injection layer; **electroluminescent**  
**display devices** with high luminance and uniform  
 emission of each colors)
- IT 517-51-1, Rubrene 51325-91-8 220071-88-5 227009-37-2  
 RL: DEV (Device component use); USES (Uses)  
 (orange light-emitting;  
**electroluminescent display devices**  
 with high luminance and uniform emission of each colors)
- IT 7385-67-3, Nile red 219638-70-7 252755-86-5 252755-96-7  
 271777-57-2 271777-58-3  
 RL: DEV (Device component use); USES (Uses)  
 (red light-emitting;  
**electroluminescent display devices**  
 with high luminance and uniform emission of each colors)

L40 ANSWER 45 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:343470 HCAPLUS Full-text

DOCUMENT NUMBER: 131:37844

TITLE: Organic **electroluminescent**  
**display device**

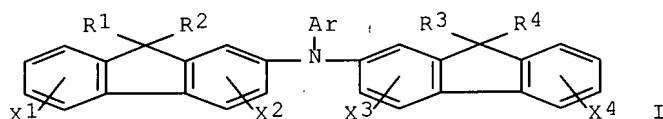
INVENTOR(S): Nakatsuka, Masakatsu; Kitamoto, Noriko

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11144875	A	19990528	JP 1997-304691	19971106
JP 3838766	B2	20061025	JP 1997-304691	19971106

PRIORITY APPLN. INFO.: <--

OTHER SOURCE(S): MARPAT 131:37844  
 GI



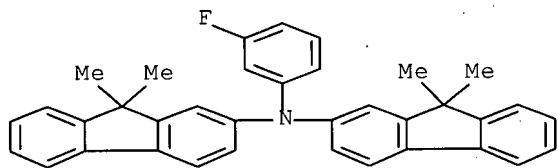
AB The organic **electroluminescent display device** contains compound I (Ar = aryl; R1-4 = alkyl, alalkyl, aryl; X1-4 = H, halo, alkyl, alkoxy, aryl) in a layer between a pair of electrodes. The organic **electroluminescent display device** is durable and has long service life.

IT 226965-57-7

RL: TEM (Technical or engineered material use); USES (Uses)  
 (organic **electroluminescent display device**)

RN 226965-57-7 HCAPLUS

CN 9H-Fluoren-2-amine, N-(9,9-dimethyl-9H-fluoren-2-yl)-N-(3-fluorophenyl)-9,9-dimethyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

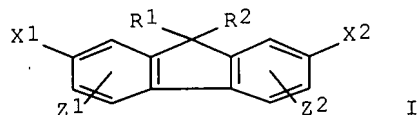
ICS C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73

ST org thin film **electroluminescent display**  
 IT **Electroluminescent devices**  
     **(electroluminescent display device)**  
 IT 164724-70-3 165320-27-4 165320-28-5 165320-30-9 165320-34-3  
 165320-35-4 165320-36-5 190334-65-7 226965-51-1 226965-55-5  
**226965-57-7 226965-59-9 226965-61-3**  
 226965-64-6 226965-66-8 226965-68-0 226965-70-4 226965-72-6  
 226965-74-8 226965-76-0 226965-78-2 227026-82-6  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     **(organic electroluminescent display**  
     **device)**

L40 ANSWER 46 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1999:343468 HCAPLUS Full-text  
 DOCUMENT NUMBER: 131:37842  
 TITLE: Organic **electroluminescent**  
         **display device**  
 INVENTOR(S): Nakatsuka, Masakatsu; Kitamoto, Noriko  
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.  
         CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 11144873	A	19990528	JP 1997-309060	199711 11
			<--	
JP 3856546	B2	20061213		
PRIORITY APPLN. INFO.:			JP 1997-309060	199711 11
			<--	
OTHER SOURCE(S):		MARPAT 131:37842		
GI				

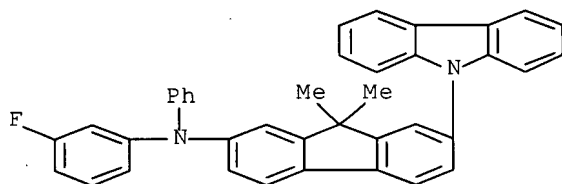


AB The organic **electroluminescent display device** contains compound I (X1 = N-carbazoyl, N-phenoxazyl, N-phenothiazyl; X2 = N-carbazoyl, N-phenoxadyl, N-phenothiazyl, N-aryl, aryl; R1-2 = H, alkyl, alalkyl, aryl; Z1-2 = H, halo, alkyl, alkoxy, aryl) in a layer between a pair of electrodes. The organic **electroluminescent display device** is durable and has long service life.

IT **226958-03-8**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     **(organic electroluminescent display**

device)

RN 226958-03-8 HCAPLUS  
 CN 9H-Fluoren-2-amine, 7-(9H-carbazol-9-yl)-N-(3-fluorophenyl)-9,9-dimethyl-N-phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06; H05B033-22  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73  
 ST org thin film **electroluminescent display**  
 IT **Electroluminescent devices**  
 (electroluminescent display device)  
 IT 226957-93-3 226957-94-4 226957-95-5 226957-96-6 226957-97-7  
 226957-98-8 226957-99-9 226958-00-5 226958-01-6 226958-02-7  
**226958-03-8** 226958-04-9 226958-05-0 226958-06-1  
 226958-07-2 226958-08-3 226958-09-4 226958-10-7 226958-11-8  
 226958-12-9 226958-13-0 226958-14-1  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (organic **electroluminescent display**  
**device**)

L40 ANSWER 47 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1997:784319 HCAPLUS Full-text  
 DOCUMENT NUMBER: 128:55234  
 TITLE: Triazole electron-transporting material and  
 organic **electroluminescent**  
**device** using it  
 INVENTOR(S): Eda, Toshio; Onikubo, Shunichi; Tamano, Michiko;  
 Okutsu, Satoshi  
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 09316440	A	19971209	JP 1996-131491	199605 27

PRIORITY APPLN. INFO.:

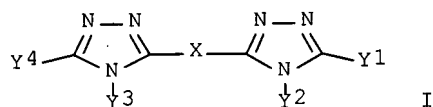
&lt;-- JP 1996-131491

199605  
27

&lt;--

OTHER SOURCE(S):  
GI

MARPAT 128:55234



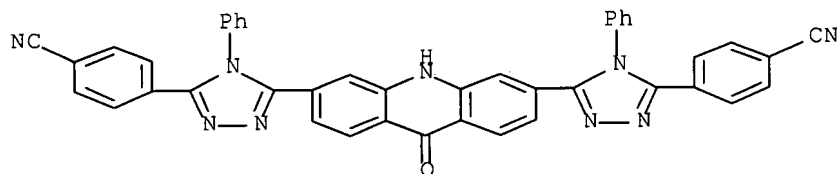
AB The title material is a triazole derivative I [X = divalent group; Y1-4 = H, halo, (substituted) C1-20 alkyl, C6-40 aryl, C4-8 cycloalkyl, or heterocyclic group containing N, O, or S; Y1 = Y2 = Y3 = Y4 ≠ H]. The title device has ≥1 layer containing ≥1 of the material. The device is useful for a flat light source and a **light-emitting display**. The material shows high electron-transporting and -injecting properties and the device shows high brightness and long service life.

IT 199802-59-0

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** containing  
triazole electron-transporting material)

RN 199802-59-0 HCAPLUS

CN Benzonitrile, 4,4'-[(9,10-dihydro-9-oxo-3,6-acridinediyl)bis(4-phenyl-4H-1,2,4-triazole-5,3-diyl)]bis- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 28

ST triazole electron transporter org **electroluminescent device**

IT **Electroluminescent devices**

(organic **electroluminescent device** containing  
triazole electron-transporting material)

IT 199802-55-6 199802-56-7 199802-57-8 199802-59-0  
199802-60-3 199876-04-5

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** containing  
triazole electron-transporting material)

IT 199802-65-8P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)

(organic **electroluminescent device** containing  
triazole electron-transporting material)

IT 62-53-3, Benzenamine, reactions 100-21-0, 1,4-Benzenedicarboxylic



acid, reactions 43038-36-4, 4-Cyanobenzoic acid hydrazide  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (organic **electroluminescent device** containing  
 triazole electron-transporting material)

L40 ANSWER 48 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN .

ACCESSION NUMBER: 1997:732405 HCAPLUS Full-text

DOCUMENT NUMBER: 128:8615

TITLE: Phenyltriazole derivative and organic  
**electroluminescent device**  
 using it

INVENTOR(S): Enokida, Toshio; Tamano, Michiko; Onikubo,  
 Shunichi; Okutsu, Satoshi

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 31 pp.

CODEN: JKXXAF

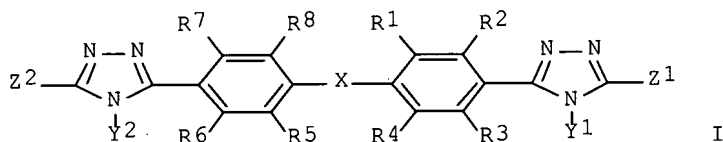
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09291274	A	19971111	JP 1996-107453	199604 26
			<--	
JP. 3656318	B2	20050608		
PRIORITY APPLN. INFO.:			JP 1996-107453	199604 26
			<--	
OTHER SOURCE(S):		MARPAT 128:8615		
GI				



AB The material is a phenyltriazole derivative I [R1-8 = H, halo, OH, CO2, cyano, NO2, amino, alkyl, alkoxy, C1-40 aryl, aryloxy, cycloalkyl, heterocyclic group; R1-R2, R3-R4, R5-R6, R7-R8 may form aromatic ring; Y1-2, Z1-2 = H, halo, alkyl, aryl, cycloalkyl, heterocyclic group; X = O, S, SO2, C:O, C:S, C:(CN)2, C:(CN)A, C:S:O, C:NCN, styryl, tolyl, butadiene, alkylene, CO, cycloalkylene, arylene, heterocyclic group; A = halo]. The **electroluminescent device** contains  $\geq 1$  of the material in  $\geq 1$  organic thin layer. The device is useful for a flat light source and an optical **display**. The material has good and stable electron-injecting property and the device shows high luminescent efficiency, brightness, and long service life.

IT 198703-40-1P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
 (Technical or engineered material use); PREP (Preparation); USES

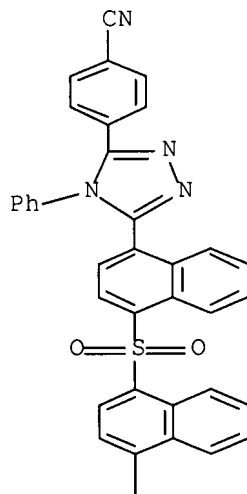
(Uses)

(organic **electroluminescence device** containing  
phenyltriazole derivative having high electron-injecting property)

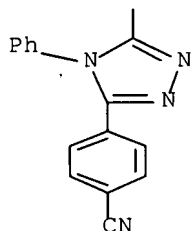
RN 198703-40-1 HCAPLUS

CN Benzonitrile, 4,4'-[sulfonylbis[4,1-naphthalenediyl(4-phenyl-4H-  
1,2,4-triazole-5,3-diyl)]]bis- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 28

ST phenyltriazole electron transporter org **electroluminescent device**; triazole phenyl electron transporter.  
**electroluminescent device**

IT **Electroluminescent devices**

(organic **electroluminescence device** containing

phenyltriazole derivative having high electron-injecting property)

IT 198703-39-8P 198703-40-1P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES  
(Uses)

(organic electroluminescence device containing  
phenyltriazole derivative having high electron-injecting property)  
IT 198703-41-2 198703-42-3 198703-43-4  
198703-44-5

RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)

(organic electroluminescence device containing  
phenyltriazole derivative having high electron-injecting property)  
IT 62-53-3, Benzenamine, reactions 613-94-5, Benzoic hydrazide  
7158-32-9 43038-36-4 198703-45-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic electroluminescence device containing  
phenyltriazole derivative having high electron-injecting property)

L40 ANSWER 49 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:648628 HCAPLUS Full-text

DOCUMENT NUMBER: 127:301097

TITLE: Organic electroluminescent  
device containing distyryl compound

INVENTOR(S): Suzuki, Ichiro; Sakai, Toshio; Nakamura, Hiroaki

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

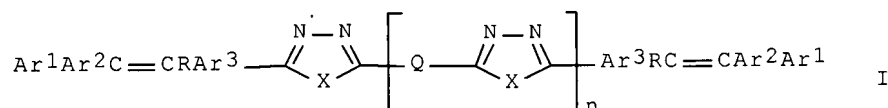
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 09255949	A	19970930	JP 1996-64067	199603 21

PRIORITY APPLN. INFO.: <--  
JP 1996-64067  
199603  
21

OTHER SOURCE(S): MARPAT 127:301097  
GI



AB The device contains a distyryl compound I (Ar<sup>1</sup>-2 = C<sub>6</sub>-20 aromatic group, C<sub>2</sub>-18 heterocyclic group; Ar<sup>3</sup> = C<sub>6</sub>-20 aromatic group; R = H, C<sub>1</sub>-6 alkyl, C<sub>6</sub>-20 aromatic group; X = O, S, S connecting with C<sub>6</sub>-20 aromatic group; Q = C<sub>6</sub>-20 aromatic group, C<sub>1</sub>-6 alkylene; n = 0, 1). The device is useful for **displays**. The device shows high luminescent efficiency, thermostability, thin-film properties, and no transition to a crystal phase.

IT 197154-09-9P

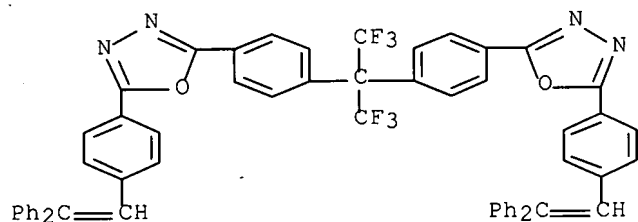
RL: DEV (Device component use); PNU (Preparation, unclassified);

PREP (Preparation); USES (Uses)

(organic electroluminescent device containing  
distyryl compound as light-emitting material)

RN 197154-09-9 HCAPLUS

CN 1,3,4-Oxadiazole, 2,2'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis[5-[4-(2,2-diphenylethenyl)phenyl]]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 28

ST distyryl compd org electroluminescent device

IT Electroluminescent devices

(organic electroluminescent device containing  
distyryl compound as light-emitting material)

IT 197154-03-3P 197154-05-5P 197154-07-7P 197154-09-9P

197154-11-3P 197154-13-5P 197154-15-7P 197154-17-9P

197154-19-1P 197154-20-4P 197154-21-5P 197154-22-6P

197154-24-8P 197154-25-9P 197154-27-1P 197154-28-2P

197154-29-3P 197154-30-6P 197154-31-7P 197154-32-8P

197154-33-9P 197154-34-0P 197154-35-1P 197154-36-2P

RL: DEV (Device component use); PNU (Preparation, unclassified);

PREP (Preparation); USES (Uses)

(organic electroluminescent device containing  
distyryl compound as light-emitting material)

IT 197154-01-1P

RL: PNU (Preparation, unclassified); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)

(organic electroluminescent device containing  
distyryl compound as light-emitting material)

IT 62-53-3, Benzenamine, reactions 92-67-1, 4-Aminobiphenyl

100-20-9, 1,4-Benzenedicarbonyl dichloride 104-94-9,

p-Methoxyaniline 106-49-0, p-Methylaniline, reactions 302-01-2,

Hydrazine, reactions 1102-92-7 1314-80-3, Phosphorus sulfide

(P2S5) 7158-32-9 18708-44-6 19855-84-6 23730-63-4

43122-73-2 197153-71-2 197153-73-4 197153-75-6 197153-77-8

197153-79-0 197153-81-4 197153-83-6 197153-85-8 197153-87-0

197153-89-2 197153-91-6 197153-98-3

RL: RCT (Reactant); RACT (Reactant or reagent)

(organic electroluminescent device containing  
distyryl compound as light-emitting material)

L40 ANSWER 50 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:551380 HCAPLUS Full-text

DOCUMENT NUMBER: 127:285631

TITLE: Heterolayer light-emitting

diodes based on poly(p-phenylene vinylene)

AUTHOR(S): Riess, Walter  
 CORPORATE SOURCE: Physikalisches Institut und Bayreuther Institut  
 fur Makromolekulforschung Universitat Bayreuth,  
 Bayreuth, D-95440, Germany  
 SOURCE: Polymers for Advanced Technologies (1997  
 ), 8(7), 381-391  
 CODEN: PADTE5; ISSN: 1042-7147  
 PUBLISHER: Wiley  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

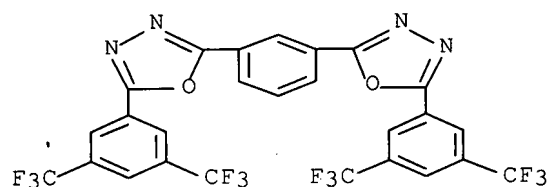
AB To enhance the quantum efficiency of poly-p-phenylene vinylene (PPV) **light-emitting** diodes (LEDs), the authors have fabricated metal/insulator/polymer (MIP) LEDs and heterolayer LEDs based on PPV and oxadiazole polymers. The current-voltage (I-V) characteristics and **electro-luminescence** (EL) intensity of the MIP structures **display** a pronounced dependence of the insulator thickness and the authors detect an increase in the quantum efficiency of more than a factor of 30 at an AlOx layer thickness of 3-6 nm. The device characteristics are qual. understood within inorg. metal insulator semi-conductor (MIS) theory and can be explained by a voltage-dependent barrier for minority carrier injection in connection with a hole-blocking barrier at the PPV/insulator interface. The authors' oxadiazole polymers used in the heterolayer polymeric devices were characterized by a high thermal stability and excellent film-forming properties. These materials act as efficient hole-blocking, electron transport and injection layers in PPV-based LEDs and the authors measure a significantly improved device performance with external quantum efficiencies of >0.5%. Temperature-dependent studies point to a relatively balanced charge carrier injection and reveal the influence of space charge limited currents on the device performance at low temperature

IT 173865-12-8

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (heterolayer **light-emitting** diodes based on  
 poly(p-phenylene vinylene) and their properties)

RN 173865-12-8 HCAPLUS

CN 1,3,4-Oxadiazole, 2,2'-(1,3-phenylene)bis[5-[3,5-  
 bis(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST heterolayer **light emitting** diode polyphenylene  
 vinylene; oxadiazole polymer LED

IT Electric current carriers

**Electroluminescent devices**

Luminescence, **electroluminescence**

(heterolayer **light-emitting** diodes based on  
 poly(p-phenylene vinylene) and their properties)

IT Polymers, properties

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (oxadiazole; heterolayer **light-emitting**

diodes based on poly(p-phenylene vinylene) and their properties)

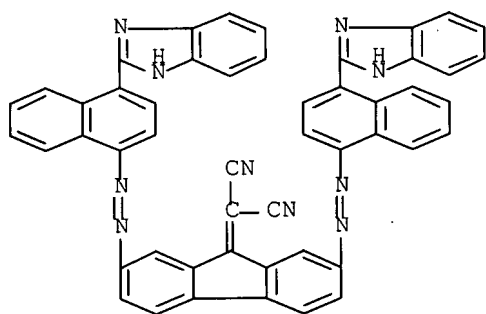
IT 7429-90-5, Aluminum, uses 50926-11-9, Indium tin oxide  
 RL: DEV (Device component use); USES (Uses)  
 (heterolayer **light-emitting** diodes based on  
 poly(p-phenylene vinylene) and their properties)  
 IT 7440-70-2, Calcium, properties 26009-24-5, Poly(p-phenylene  
 vinylene) 89961-27-3 134436-85-4 138372-67-5 160109-74-0  
 173865-10-6 173865-12-8 176655-83-7  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (heterolayer **light-emitting** diodes based on  
 poly(p-phenylene vinylene) and their properties)  
 REFERENCE COUNT: 51 THERE ARE 51 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L40 ANSWER 51 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1995:412659 HCAPLUS Full-text  
 DOCUMENT NUMBER: 122:173834  
 TITLE: Organic **electroluminescent**  
**device**  
 INVENTOR(S): Enokida, Toshio; Suda, Yasumasa  
 PATENT ASSIGNEE(S): Toyo Ink Mfg Co, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 06220446	A	19940809	JP 1993-13308	199301 29

PRIORITY APPLN. INFO.: <-- JP 1993-13308  
 199301  
 29

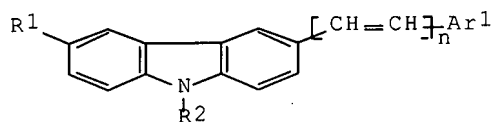
OTHER SOURCE(S): MARPAT 122:173834  
 AB The title device, suited for use as a surface light source or a **display**, comprises  
 an **electroluminescent** layer containing a bis-azo compound represented by  
 QN:NAN:NQ (A = azo moiety; Q = coupler group).  
 IT 161518-77-0  
 RL: DEV (Device component use); USES (Uses)  
 (bis-azo derivative **electroluminescent device**)  
 RN 161518-77-0 HCAPLUS  
 CN Propanedinitrile, [2,7-bis[[4-(1H-benzimidazol-2-yl)-1-  
 naphthalenyl]azo]-9H-fluoren-9-ylidene]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
 ICS H05B033-14  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST **electroluminescent device** bis azo deriv  
 IT **Electroluminescent devices**  
 (bis-azo derivative **electroluminescent device**)  
 IT 70477-65-5 161518-71-4 161518-72-5 161518-73-6 161518-74-7  
 161518-75-8 161518-76-9 **161518-77-0** 161518-78-1  
 RL: DEV (Device component use); USES (Uses)  
 (bis-azo derivative **electroluminescent device**)

L40 ANSWER 52 OF 52 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1992:521222 HCAPLUS Full-text  
 DOCUMENT NUMBER: 117:121222  
 TITLE: Organic **electroluminescent** element  
 INVENTOR(S): Ota, Masabumi; Onuma, Teruyuki; Kawamura, Fumio;  
 Sakon, Hirota; Takahashi, Toshihiko  
 PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03163188	A	19910715	JP 1990-191516	19900718
			<--	
PRIORITY APPLN. INFO.:			JP 1989-212589	A1 19890818
			<--	
OTHER SOURCE(S):		MARPAT 117:121222		
GI				



I

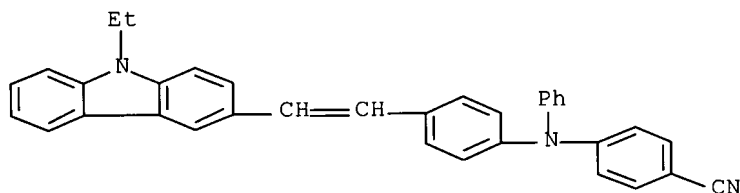
AB The title element, suited for use in large-area **displays**, comprises  $\geq 1$  organic compound thin-film layer sandwiched between an anode and a cathode layer, wherein  $\geq 1$  of the organic compound layer(s) contains I{R1,2 = (un)substituted alkyl, carbocyclic or heterocyclic aromatic ring; Ar1 = \*un)substituted carbocyclic or heterocyclic aromatic ring; n = 1-3}. The element is fabricated readily by VPE, providing a durable, high-luminescence, variable color-emitting device.

IT 138997-16-7

RL: DEV (Device component use); USES (Uses)  
(**electroluminescent device** from, as  
**light emitter** and/or electron or hole  
transporter)

RN 138997-16-7 HCAPLUS

CN Benzonitrile, 4-[[4-[2-(9-ethyl-9H-carbazol-3-yl)ethenyl]phenyl]phenylamino]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14; H05B033-22

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescence** org variable color **device**

IT **Electroluminescent devices**

(variable visible color-emitting, containing organic thin-film phosphor and electron and hole transporting layers)

IT 15082-28-7 26895-92-1 55034-79-2 58473-78-2 84746-59-8

117047-62-8 138997-11-2 138997-12-3 138997-13-4 138997-14-5

138997-15-6 **138997-16-7**

RL: DEV (Device component use); USES (Uses)

(**electroluminescent device** from, as  
**light emitter** and/or electron or hole  
transporter)

=>



## Garrett, Dawn

---

**From:** Huang, Mei Q. (ASRC)  
**Sent:** Friday, August 31, 2007 5:09 PM  
**To:** Garrett, Dawn  
**Subject:** Search Result - 10/562,652 (Part III)

**Follow Up Flag:** Review  
**Flag Status:** Flagged

Examiner Garrett,

- This is the last part of the answer - formulas 1, 2, 11 and 12. I built one parent query for all four formulas.
- Page 5-30 are the hits on formulas 2 or 11 (the 5th of the 12 answers is the instant application).
- Page 30-55 are the answers on formula 12, and
- Page 55 - are the answers of formula 1 without the overlaps of the compounds of the other formulas 2, 11 or 12.

Please feel free to contact me if you have any questions or if you would like to refine the search query. Thank you for using STIC search services!

Regards,  
Mei

*Mei Huang*

Technical Information Specialist  
ASRC Management Services (USPTO)  
EIC 1700 - REM Bldg 4B31  
(571)-272-3952  
mei.huang@uspto.gov



Gar652A3.doc



search  
feedback form.doc

10/562,652

(I)  
form.  
1,2,11,12<sup>1</sup>

=> fil reg

FILE 'REGISTRY' ENTERED AT 16:36:15 ON 31 AUG 2007

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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 30 AUG 2007. HIGHEST RN 945894-95-1

DICTIONARY FILE UPDATES: 30 AUG 2007. HIGHEST RN 945894-95-1

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TSCA INFORMATION NOW CURRENT THROUGH June 29, 2007

Please note that search-term pricing does apply when conducting SmartSELECT searches.

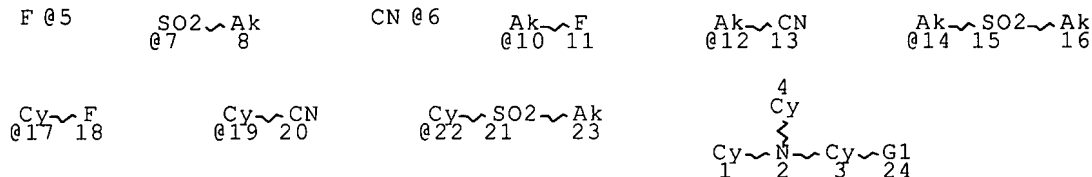
REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d que stat l15

L5 SCR 1840

L10 STR



VAR G1=5/6/7/10/12/14/17/19/22

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 8

CONNECT IS E1 RC AT 16

CONNECT IS E1 RC AT 23

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 1

GGCAT IS UNS AT 3

GGCAT IS UNS AT 4

GGCAT IS SAT AT 8

GGCAT IS SAT AT 16

GGCAT IS SAT AT 23

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

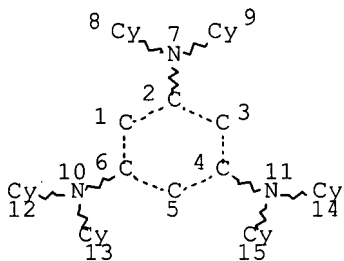
NUMBER OF NODES IS 23

STEREO ATTRIBUTES: NONE

L11 SCR 1609

L13 SCR 2043  
 L15 1600 SEA FILE=REGISTRY SSS FUL L10 AND L11 AND L5 NOT L13  
 100.0% PROCESSED 482495 ITERATIONS 1600 ANSWERS  
 SEARCH TIME: 00.00.06

=> d que stat l18  
 L18 STR

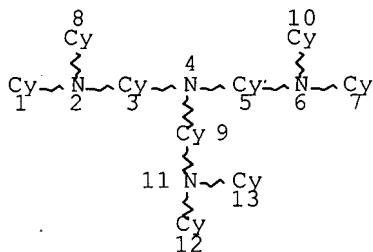


NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 GGCAT IS UNS AT 8  
 GGCAT IS UNS AT 9  
 GGCAT IS UNS AT 12  
 GGCAT IS UNS AT 13  
 GGCAT IS UNS AT 14  
 GGCAT IS UNS AT 15  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE

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 L19 STR



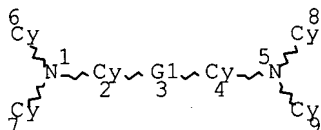
NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 GGCAT IS UNS AT 1  
 GGCAT IS UNS AT 3  
 GGCAT IS UNS AT 5  
 GGCAT IS UNS AT 7  
 GGCAT IS UNS AT 8

GGCAT IS UNS AT 10  
 GGCAT IS UNS AT 12  
 GGCAT IS UNS AT 13  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE

=> d que stat l20  
 L20 STR



REP G1=(0-8) A  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 GGCAT IS UNS AT 2  
 GGCAT IS UNS AT 4  
 GGCAT IS UNS AT 6  
 GGCAT IS UNS AT 7  
 GGCAT IS UNS AT 8  
 GGCAT IS UNS AT 9  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE

=> d his nofile

(FILE 'HOME' ENTERED AT 15:52:39 ON 31 AUG 2007)

FILE 'REGISTRY' ENTERED AT 15:53:15 ON 31 AUG 2007  
 ACT GAR652AU/A

-----  
 L1 15 SEA ABB=ON PLU=ON (372956-40-6/BI OR 817638-41-8/BI OR  
 817638-42-9/BI OR 817638-43-0/BI OR 817638-44-1/BI OR  
 817638-45-2/BI OR 817638-46-3/BI OR 817638-47-4/BI OR  
 817638-48-5/BI OR 817638-49-6/BI OR 817638-50-9/BI OR  
 817638-51-0/BI OR 817638-53-2/BI OR 817638-55-4/BI OR  
 817638-56-5/BI)  
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FILE 'LREGISTRY' ENTERED AT 15:53:23 ON 31 AUG 2007

L2 STR

FILE 'REGISTRY' ENTERED AT 15:56:19 ON 31 AUG 2007

L3 0 SEA SSS SAM L2

FILE 'LREGISTRY' ENTERED AT 15:57:25 ON 31 AUG 2007

L4 STR L2

FILE 'REGISTRY' ENTERED AT 16:01:57 ON 31 AUG 2007

L5 SCR 1840

L6 SCR 1174 OR 1357 OR 1404 OR 1781 OR 1782

L7 4 SEA SSS SAM L4 AND L5 AND L6

L8 SCR 2043 OR 1918 OR 2040 OR 2127 OR 2026 OR 2016 OR 1958

L9 3 SEA SSS SAM L4 AND L5 AND L6 NOT L8

FILE 'LREGISTRY' ENTERED AT 16:04:49 ON 31 AUG 2007

L10 STR L4

FILE 'REGISTRY' ENTERED AT 16:10:25 ON 31 AUG 2007

L11 SCR 1609

L12 10 SEA SSS SAM L10 AND L11 AND L5

L13 SCR 2043

L14 9 SEA SSS SAM L10 AND L11 AND L5 NOT L13

L15 1600 SEA SSS FUL L10 AND L11 AND L5 NOT L13

SAV TEMP L15 GAR652A3/A

L16 5 SEA ABB=ON PLU=ON L1 AND L15

L17 10 SEA ABB=ON PLU=ON L1 NOT L16

D SCA

FILE 'LREGISTRY' ENTERED AT 16:15:30 ON 31 AUG 2007

L18 STR

L19 STR

L20 STR

FILE 'REGISTRY' ENTERED AT 16:22:27 ON 31 AUG 2007

L21 1 SEA SUB=L15 SSS SAM L18

D SCA

L22 10 SEA SUB=L15 SSS FUL L18

L23 1 SEA ABB=ON PLU=ON L1 AND L22

D SCA

SAV L22 TEMP GAR652S1/A

L24 0 SEA SUB=L15 SSS SAM L19

L25 9 SEA SUB=L15 SSS FUL L19

L26 1 SEA ABB=ON PLU=ON L1 AND L25

D SCA

SAV L25 TEMP GAR652S2/A

L27 15 SEA SUB=L15 SSS SAM L20

L28 309 SEA SUB=L15 SSS FUL L20

L29 3 SEA ABB=ON PLU=ON L1 AND L28

SAV L28 TEMP GAR652S3/A

L30 1282 SEA ABB=ON PLU=ON L15 NOT (L22 OR L25 OR L28)

FILE 'HCAPLUS' ENTERED AT 16:25:55 ON 31 AUG 2007

L31 3 SEA ABB=ON PLU=ON L16

L32 9 SEA ABB=ON PLU=ON L22

L33 6 SEA ABB=ON PLU=ON L25

L34 151 SEA ABB=ON PLU=ON L28

L35 12 SEA ABB=ON PLU=ON (L31 OR L32 OR L33)

L36 143 SEA ABB=ON PLU=ON L34 NOT L35

L37 QUE ABB=ON PLU=ON ELECTROLUM!N? OR ORGANOLUM!N?

L38 QUE ABB=ON PLU=ON ILLUMINAT?

L39 QUE ABB=ON PLU=ON (ELECTRO OR ORGANO OR ORG#) (2A) LUM!N?

OR LIGHT(2A) (EMISSION? OR EMIT?) OR EL OR E(W) L OR OLED

OR L(W) E(W) D

L40 74 SEA ABB=ON PLU=ON L36 AND (L37 OR L38 OR L39)

L41 QUE ABB=ON PLU=ON (L37 OR L38 OR L39) (3A) (DEVICE? OR  
APPARAT? OR APP## OR ASSEMBLY OR ASSEMBLIES)  
L42 70 SEA ABB=ON PLU=ON L40 AND L41  
L43 QUE ABB=ON PLU=ON DISPLAY? OR MONITOR? OR SCREEN? OR  
PANEL? OR FLATPANEL? OR FLAT(W) PANEL?  
L44 12 SEA ABB=ON PLU=ON L42 AND L43  
L45 QUE ABB=ON PLU=ON OPTICAL?/SC,SX  
L46 59 SEA ABB=ON PLU=ON L42 AND L45  
L47 55 SEA ABB=ON PLU=ON (L44 OR L46) AND (PY<=2004 OR  
PRY<=2004 OR AY<=2004)  
L48 12 SEA ABB=ON PLU=ON L44 AND L47  
L49 12 SEA ABB=ON PLU=ON L48 NOT L35  
L50 661 SEA ABB=ON PLU=ON L30  
L51 181 SEA ABB=ON PLU=ON L50 AND L41  
L52 37 SEA ABB=ON PLU=ON L51 AND L43  
L53 29 SEA ABB=ON PLU=ON L52 AND L45  
L54 24 SEA ABB=ON PLU=ON L53 AND (PY<=2004 OR PRY<=2004 OR  
AY<=2004)  
L55 18 SEA ABB=ON PLU=ON L54 NOT (L35 OR L49)

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 16:36:35 ON 31 AUG 2007

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FILE COVERS 1907 - 31 Aug 2007 VOL 147 ISS 11

FILE LAST UPDATED: 30 Aug 2007 (20070830/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l35 ibib abs hitstr hitind 1-12

L35 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2007:761315 HCAPLUS Full-text

DOCUMENT NUMBER: 147:154181

TITLE: Compounds useful as hole transporter for electronic devices

INVENTOR(S): Radu, Nora Sabina; Johansson, Gary A.; Herron, Norman; Gehret, Troy C.

PATENT ASSIGNEE(S): E. I. du Pont de Nemours and Company, USA

SOURCE: PCT Int. Appl., 46pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007079101	A2	20070712	WO 2006-US49336	20061227

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: US 2005-754976P P 20051229

AB The present invention relates to novel compds. and polymers, compns. comprising novel compds. or polymers, and electronic devices comprising at least one layer containing the compound or polymer.

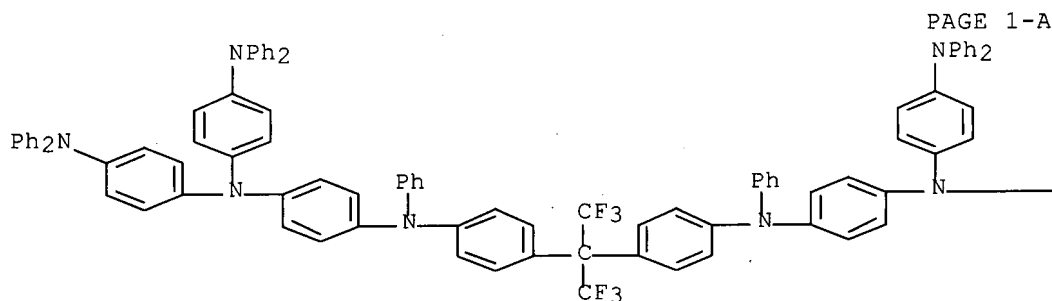
IT 943768-02-3P

RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

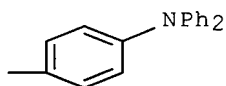
(compds. useful as hole transporter for electronic devices)

RN 943768-02-3 HCAPLUS

CN 1,4-Benzenediamine, N1,N1'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis[N4,N4-bis[4-(diphenylamino)phenyl]-N1-phenyl]- (CA INDEX NAME)



PAGE 1-B



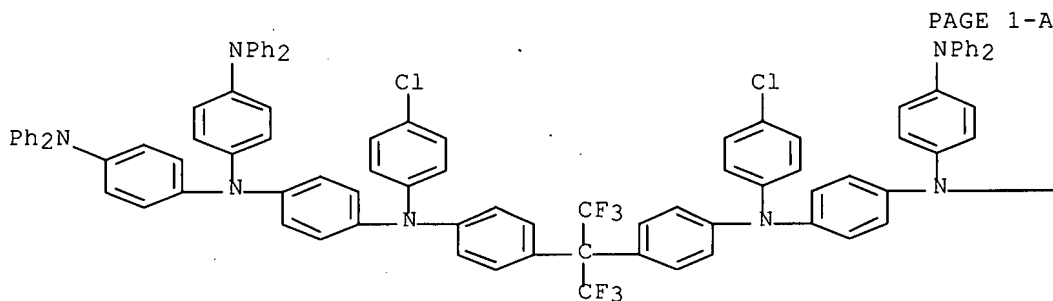
IT 943768-03-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(preparation of compds. useful as hole transporter for electronic devices)

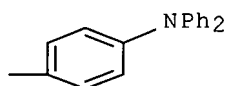
RN 943768-03-4 HCAPLUS

CN 1,4-Benzenediamine, N1,N1'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]di-4,1-phenylene]bis[N1-(4-chlorophenyl)-N4,N4-bis[4-(diphenylamino)phenyl]- (CA INDEX NAME)



PAGE 1-A

PAGE 1-B



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 943768-02-3P

RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(compds. useful as hole transporter for electronic devices)

IT 123173-98-8P 943768-01-2P 943768-03-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(preparation of compds. useful as hole transporter for electronic devices)



L35 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:256637 HCAPLUS Full-text  
 DOCUMENT NUMBER: 146:306955  
 TITLE: Organic electroluminescent devices, display  
 devices and illumination equipment  
 INVENTOR(S): Sugita, Shuichi; Kita, Hiroshi; Iwamaru,  
 Shunichi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 51pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007059687	A	20070308	JP 2005-244206	200508 25

PRIORITY APPLN. INFO.: JP 2005-244206  
 200508  
 25

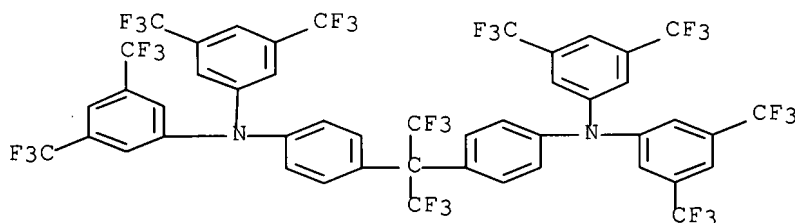
AB Organic EL devices have, on substrates, electrodes and  $\geq 1$  organic layers  $\geq 1$  of which are dopant-containing light emitting layers, and electron transport layers lie next to the light emitting layers.

IT **817638-43-0**

RL: TEM (Technical or engineered material use); USES (Uses)  
 (electron transport layers; light emitting layers in organic electroluminescent devices, display devices and illumination equipment)

RN 817638-43-0 HCAPLUS

CN Benzenamine, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis  
 [N,N-bis[3,5-bis(trifluoromethyl)phenyl]- (CA INDEX NAME)



CC 76-3 (Electric Phenomena)

Section cross-reference(s): 74

IT 4733-39-5 16842-52-7 65181-78-4 123847-85-8 405171-87-1  
 787577-80-4 **817638-43-0** 872216-44-9 922174-70-7  
 924309-55-7 924903-78-6 925670-17-3

RL: TEM (Technical or engineered material use); USES (Uses)  
 (electron transport layers; light emitting layers in organic electroluminescent devices, display devices and illumination equipment)

L35 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:876275 HCAPLUS Full-text  
 DOCUMENT NUMBER: 144:322129  
 TITLE:

Charge-transfer interfaces between metal and redox arylamine molecular films: As probed with anode interfacial engineering approach in single-layer organic diodes

AUTHOR(S): Li, J. C.; Blackstock, S. C.; Szulczewski, G. J.  
 CORPORATE SOURCE: Department of Chemistry and The Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL, 35487, USA

SOURCE: Los Alamos National Laboratory, Preprint Archive, Condensed Matter (2005) 1-8, arXiv:cond-mat/0508453, 19 Aug 2005  
 CODEN: LNCMFR  
 URL: <http://xxx.lanl.gov/pdf/cond-mat/0508453>

PUBLISHER: Los Alamos National Laboratory  
 DOCUMENT TYPE: Preprint  
 LANGUAGE: English

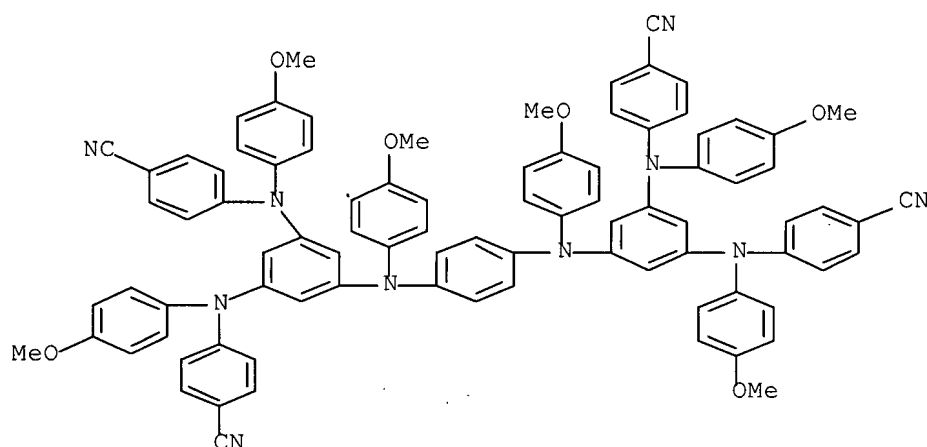
AB We investigate the charge-transfer interfaces between metal and redox arylamine mol. films through studying the current-voltage characteristics of single-layer organic diodes with the aid of anode interfacial engineering method. The diode turn-on voltage is shown to be highly sensitive to the arylamine/metal charge-transfer interfaces and thus can serve as a probe in detecting such organic/metal interfaces. We show that the diode elec. performance could be tuned through engineering the arylamine/metal interfaces via controlling the factors of anode work function, arylamine substitute groups, and active layer surface morphol. etc. The conduction mechanism of the diodes is shown to be injection limited, which could be well described with Richardson-Schottky thermionic emission model. Our work may provide some insight into the use of single-layer organic diode and interfacial engineering method to rapidly probe the organic/metal and even organic/organic charge-transfer interfaces.

IT 880094-08-6

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (charge-transfer interfaces between metal and redox arylamine mol. films through current-voltage characteristics of single-layer organic diodes with anode interfacial engineering method)

RN 880094-08-6 HCAPLUS

CN Benzonitrile, 4,4',4'',4'''-[1,4-phenylenebis[[4-methoxyphenyl)imino]-5,1,3-benzenetriylbis[(4-methoxyphenyl)imino]]]tetrakis- (9CI) (CA INDEX NAME)



CC 76-3 (Electric Phenomena)  
 IT 143-10-2, 1-Decanethiol 7440-22-4, Silver, properties 7440-50-8,  
 Copper, properties 7440-57-5, Gold, properties 37345-62-3  
 293726-19-9 **880094-08-6**

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (charge-transfer interfaces between metal and redox arylamine  
 mol. films through current-voltage characteristics of  
 single-layer organic diodes with anode interfacial engineering  
 method)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L35 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:138480 HCAPLUS Full-text

DOCUMENT NUMBER: 142:249440

TITLE: Organic electroluminescent elements with  
 improved brightness, emission efficiency, and  
 durability and lighting apparatus and displays  
 using them

INVENTOR(S): Oshiyama, Tomohiro; Kato, Eisaku; Suzurizato,  
 Yoshiyuki; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 57 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005044791	A	20050217	JP 2004-195397	20040701
PRIORITY APPLN. INFO.:			JP 2003-193520	A
				20030708

OTHER SOURCE(S): MARPAT 142:249440

AB The elements, useful for blue- or white-emitting backlights for LCD, have layers containing triarylamine derivs. bearing electron-withdrawing groups adjacent to light-emitting layers between anodes and cathodes. The layers show good hole-barrier properties.

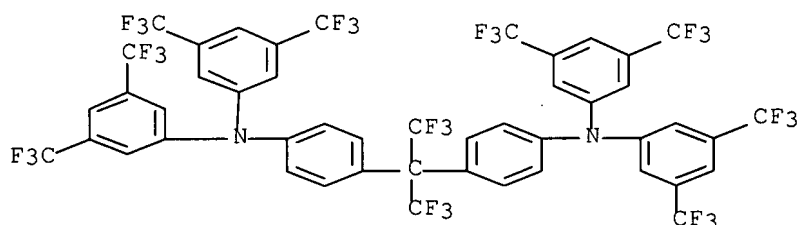
IT 817638-43-0 817638-44-1 817638-51-0  
844665-52-7 844665-53-8 844665-54-9

RL: DEV (Device component use); USES (Uses)

(hole-barrier layer; organic EL elements containing electron-withdrawing triarylaminines in hole-barrier layers for displays with good brightness, emission efficiency, and durability)

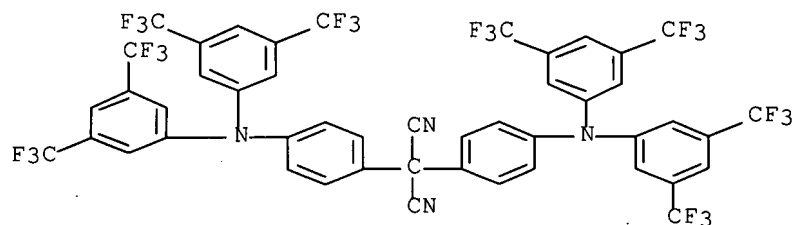
RN 817638-43-0 HCAPLUS

CN Benzenamine, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis  
[N,N-bis[3,5-bis(trifluoromethyl)phenyl]- (CA INDEX NAME)



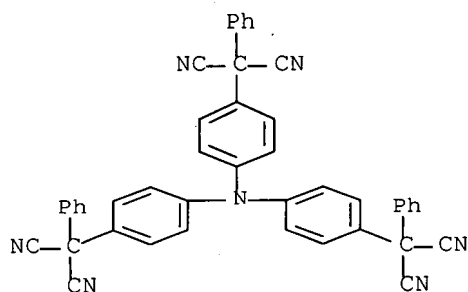
RN 817638-44-1 HCAPLUS

CN Propanedinitrile, bis[4-[bis[3,5-bis(trifluoromethyl)phenyl]amino]phenyl]- (9CI) (CA INDEX NAME)

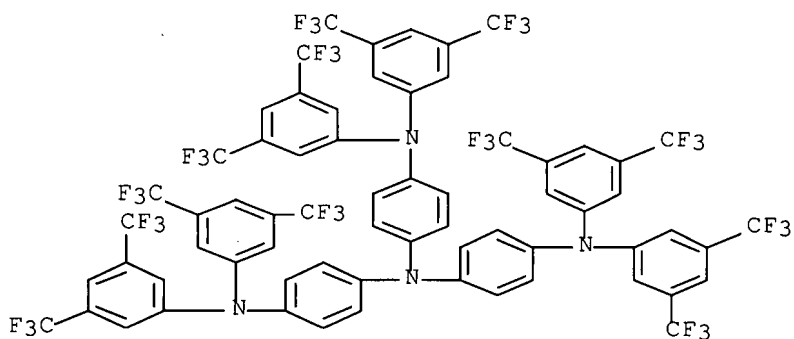


RN 817638-51-0 HCAPLUS

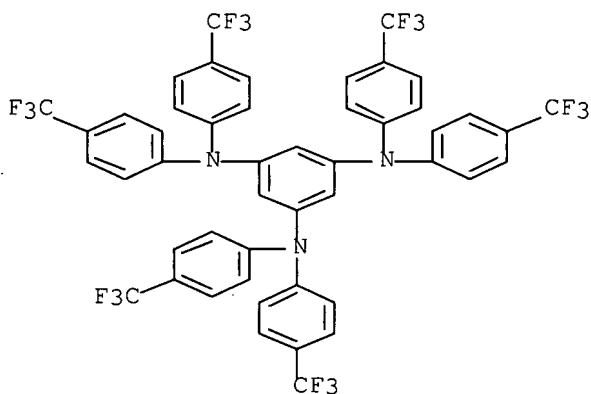
CN Propanedinitrile, 2,2',2''-(nitrilotri-4,1-phenylene)tris[2-phenyl]- (9CI) (CA INDEX NAME)



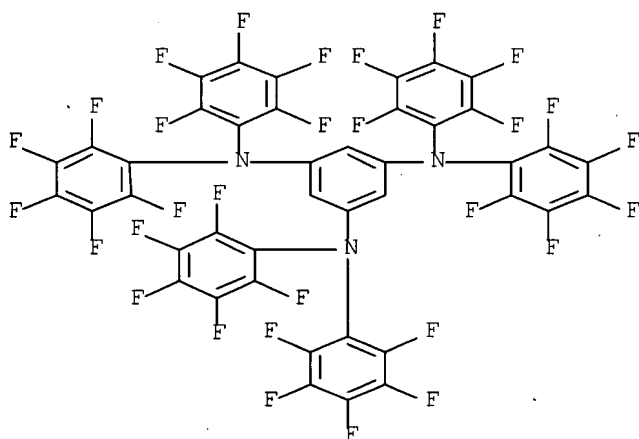
RN 844665-52-7 HCAPLUS  
 CN 1,4-Benzenediamine, N,N-bis[4-[bis[3,5-bis(trifluoromethyl)phenyl]amino]phenyl]-N',N'-bis[3,5-bis(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



RN 844665-53-8 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-hexakis[4-(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



RN 844665-54-9 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-hexakis(pentafluorophenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-22  
ICS C07C211-56; C09K011-06; H05B033-14  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 73  
IT 1821-41-6 152842-19-8 **817638-43-0 817638-44-1**  
**817638-51-0** 844665-51-6 **844665-52-7**  
**844665-53-8 844665-54-9** 844665-55-0  
844665-56-1 844665-57-2 844665-58-3 844665-59-4  
RL: DEV (Device component use); USES (Uses)  
(hole-barrier layer; organic EL elements containing electron-withdrawing  
triarylamines in hole-barrier layers for displays with good  
brightness, emission efficiency, and durability)

L35 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2005:35085 HCAPLUS Full-text  
DOCUMENT NUMBER: 142:102910  
TITLE: Organic electroluminescent device, illuminating  
device, and display  
INVENTOR(S): Oshiyama, Tomohiro; Kita, Hiroshi; Katoh, Eisaku  
PATENT ASSIGNEE(S): Konica Minolta Holding, Inc., Japan  
SOURCE: PCT Int. Appl., 80 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005004549	A1	20050113	WO 2004-JP9391	20040625

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW  
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,

AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL,  
PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG

EP 1651013 A1 20060426 EP 2004-746860

200406  
25

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
PL, SK, HR

CN 1817066 A 20060809 CN 2004-80019019

200406  
25

US 2007099025 A1 20070503 US 2005-562652

200512  
27

*current application*

PRIORITY APPLN. INFO.:

JP 2003-193519 A

200307  
08

WO 2004-JP9391 W

200406  
25

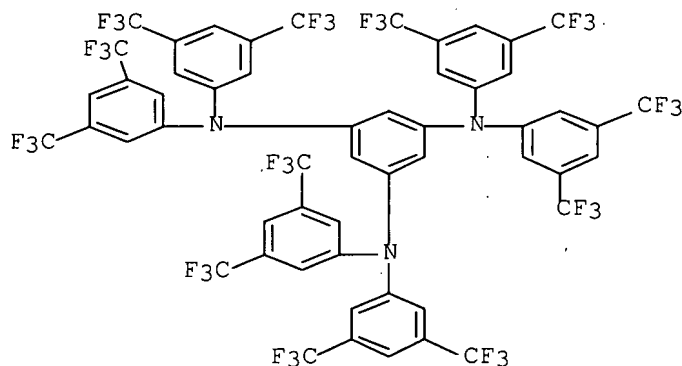
AB An organic electroluminescent device comprising at least a light-emitting layer containing a phosphorescent compound between an anode and a cathode is characterized by comprising an adjoining layer so arranged between the light-emitting layer and the cathode as to be adjacent to the light-emitting layer and containing a compound with an electron-withdrawing group having an HOMO at -5.7 eV to -7.0 eV and an LUMO at -1.3 eV to -2.3 eV.

IT 817638-41-8 817638-42-9 817638-43-0  
817638-44-1 817638-51-0

RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent device, illumination apparatus and display)

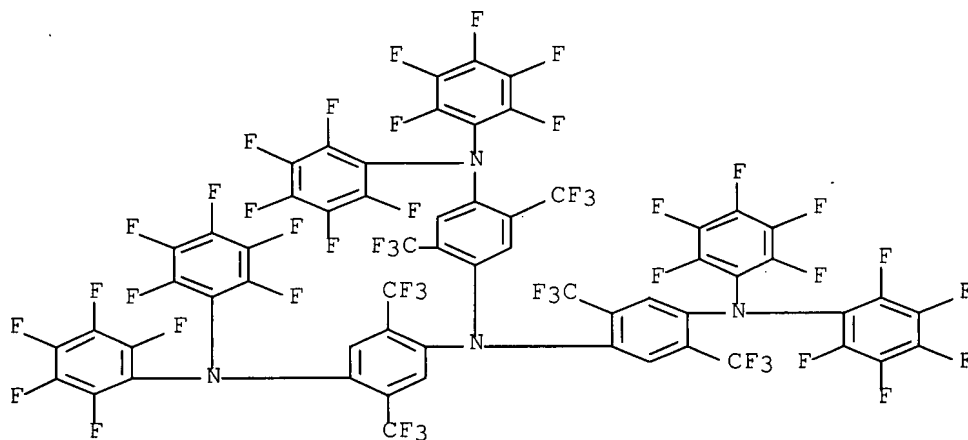
RN 817638-41-8 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-hexakis[3,5-bis(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



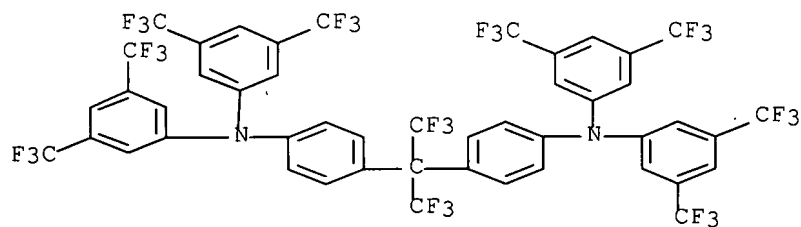
RN 817638-42-9 HCAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis(pentafluorophenyl)amino]-2,5-bis(trifluoromethyl)phenyl]-N',N'-bis(pentafluorophenyl)-2,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



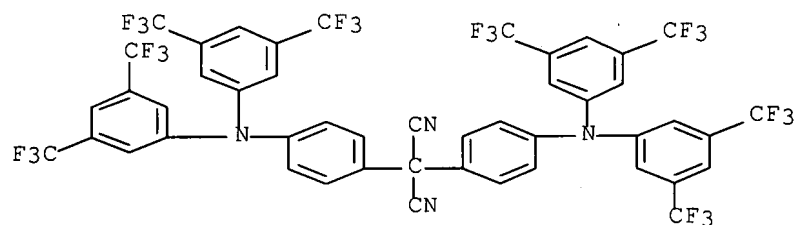
RN 817638-43-0 HCAPLUS

CN Benzenamine, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis  
[N,N-bis[3,5-bis(trifluoromethyl)phenyl]- (CA INDEX NAME)



RN 817638-44-1 HCAPLUS

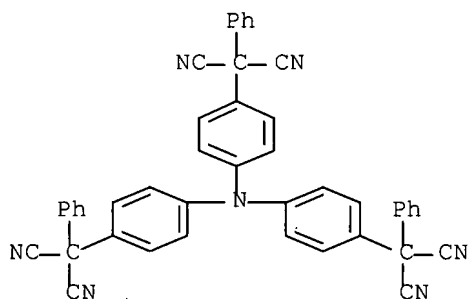
CN Propanedinitrile, bis[4-[bis[3,5-bis(trifluoromethyl)phenyl]amino]ph  
enyl]- (9CI) (CA INDEX NAME)



RN 817638-51-0 HCAPLUS

CN Propanedinitrile, 2,2',2''-(nitrilotri-4,1-phenylene)tris[2-phenyl-  
(9CI) (CA INDEX NAME).





IC ICM H05B033-22  
ICS H05B033-14; G02F001-1335  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74  
IT 372956-40-6 **817638-41-8** **817638-42-9**  
**817638-43-0** **817638-44-1** 817638-45-2  
817638-46-3 817638-47-4 817638-48-5 817638-49-6 817638-50-9  
**817638-51-0** 817638-53-2 817638-55-4 817638-56-5  
RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent device, illumination apparatus and display)  
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN  
THE RE FORMAT

L35 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2004:957380 HCAPLUS Full-text  
DOCUMENT NUMBER: 141:396986  
TITLE: Organic colorants with metallic gloss and  
film-forming materials containing them with  
excellent dispersion stability  
INVENTOR(S): Ogura, Katsuyuki; Kurata, Ryuichiro; Kano,  
Fumihisa  
PATENT ASSIGNEE(S): Chiba University, Japan; Toyo Ink Mfg. Co., Ltd.  
SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004315545	A	20041111	JP 2003-55065	20030303
				20030228

PRIORITY APPLN. INFO.: JP 2003-52095 A

AB The colorants, useful for writing and printing inks and coatings, are depicted as  $A[\text{NRXC}(\text{CN})\text{:C}(\text{CN})_2]_n$  [A = (un)substituted aromatic, heterocyclic, condensed, or spirocyclic ring residue, (un)substituted biphenyl, fluorene, or triphenylamine-based dendrimer residue; X = (un)substituted aromatic or heterocyclic ring residue; R = (un)substituted aromatic group, heterocyclic group, alkyl, alkenyl,

or cycloalkyl;  $n \geq 2$ ). Thus, an ink containing N,N'-bis(4-tricyanoethenylphenyl)-N,N'-diphenylbenzidine (prepared from N,N,N',N'-tetraphenylbenzidine and tetracyanoethylene), a rosin-modified phenolic resin, and a petroleum-type solvent showed good gloss and adhesion to paper and metal.

IT 790256-28-9P, 1,3-Bis[[4-(tricyanoethenyl)phenyl]phenylamino]-5-(diphenylamino)benzene 790256-29-0P,

1,3,5-Tris[[4-(tricyanoethenyl)phenyl]phenylamino]benzene

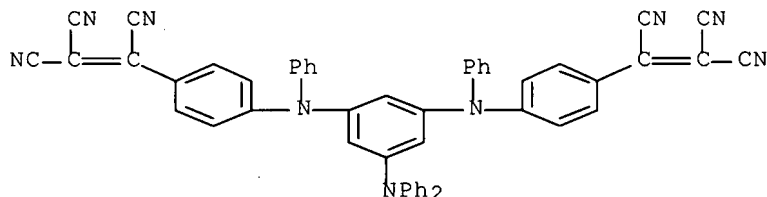
790256-30-3P, Tris[4-[N-[4-(tricyanoethenyl)phenyl]phenylamino]phenyl]amine

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(colorant; organic colorants with metallic gloss for inks and coatings with good storage stability)

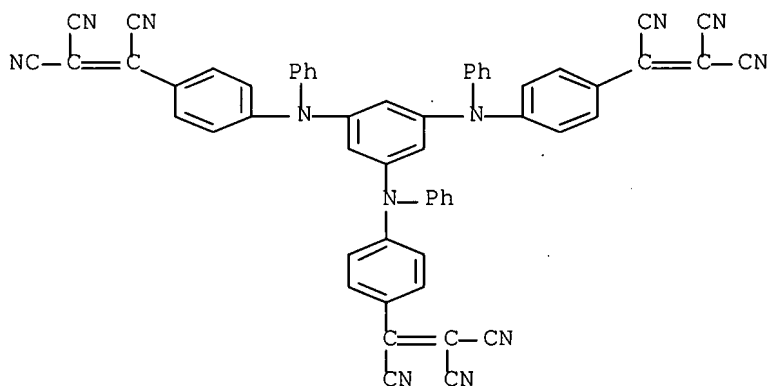
RN 790256-28-9 HCAPLUS

CN Ethenetricarbonitrile, 2,2'-[[5-(diphenylamino)-1,3-phenylene]bis[(phenylimino)-4,1-phenylene]]bis- (9CI) (CA INDEX NAME)



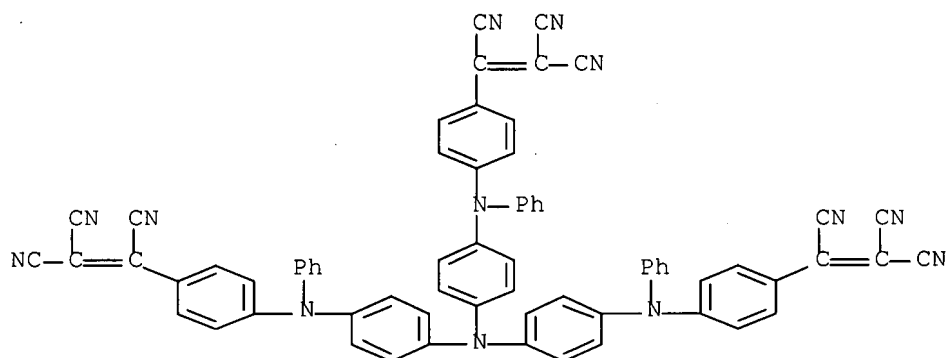
RN 790256-29-0 HCAPLUS

CN Ethenetricarbonitrile, 2,2',2''-[1,3,5-benzenetriyltris[(phenylimino)-4,1-phenylene]]tris- (9CI) (CA INDEX NAME)



RN 790256-30-3 HCAPLUS

CN Ethenetricarbonitrile, 2,2',2''-[1,3,5-benzenetriyltris[4,1-phenylene(phenylimino)-4,1-phenylene]]tris- (9CI) (CA INDEX NAME)



IC ICM C09B023-00

ICS C08L005-00; C08L101-00; C09D007-12; C09D201-00

CC 42-12 (Coatings, Inks, and Related Products)

Section cross-reference(s): 25, 41

IT 790256-24-5P, N,N'-Bis(4-tricyanoethenylphenyl)-N,N'-diphenylbenzidine 790256-25-6P, 2,7-Bis[N-phenyl-N-[p-(tricyanoethenyl)phenyl]amino]fluorene 790256-27-8P, 9-(Dicyanomethylene)-2,7-bis[[N-phenyl-N-(4-tricyanophenyl)]amino]fluorene 790256-28-9P, 1,3-Bis[[4-(tricyanoethenyl)phenyl]phenylamino]-5-(diphenylamino)benzene 790256-29-0P, 1,3,5-Tris[[4-(tricyanoethenyl)phenyl]phenylamino]benzene 790256-30-3P, Tris[4-[N-[4-(tricyanoethenyl)phenyl]phenylamino]phenyl]amine 790256-31-4P, 2-(Diphenylamino)-2',7,7'-tris[N-phenyl-[4-(tricyanoethenyl)phenyl]amino]-9,9'-spirofluorene 790256-32-5P, 2,2',7,7'-Tetrakis[N-phenyl-[4-(tricyanoethenyl)phenyl]amino]-9,9'-spirofluorene 790256-34-7P, 2,2-Bis[4-[N-phenyl-N-[p-(tricyanoethenyl)phenyl]amino]phenyl]propane 790256-35-8P, 1,3-Bis[N-methyl-p-(tricyanoethenyl)anilino]-5-(N-methylanilino)benzene 790256-36-9P, 1,3,5-Tris[N-methyl-p-(tricyanoethenyl)anilino]benzene

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(colorant; organic colorants with metallic gloss for inks and coatings with good storage stability)

L35 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:118662 HCAPLUS Full-text

DOCUMENT NUMBER: 140:172301

TITLE: Organic electroluminescent elements with improved brightness and durability and color displays using them

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 57 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003-134267

13

A

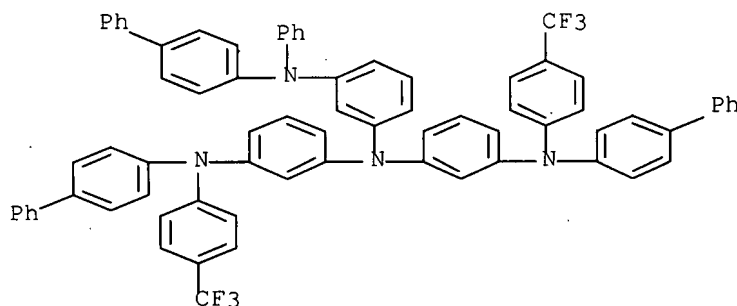
15

AB The elements contain , R1R2R3N [R1-3 = substituted p-A-Ph; A = (un)substituted aromatic hydrocarbyl], preferably in hole-transport layers. The elements may have light-emitting layers containing phosphorescent complexes of Group VIII metals (Os, Ir, or Pt, preferably) and  $\geq 1$  fluorescent compds. having maximum fluorescence wavelength longer than maximum emission wavelength of the complexes.

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(hole-transport layer; organic EL elements containing triphenylamine-based compds. with improved brightness and durability for displays)

CN 1,3-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N'-[3-([1,1'-biphenyl]-4-ylphenylamino)phenyl]-N'-[1-([1,1'-biphenyl]-4-yl[4-(trifluoromethyl)phenyl]amino)phenyl]-N-[4-(trifluoromethyl)phenyl]-  
(9CI) (CA INDEX NAME)



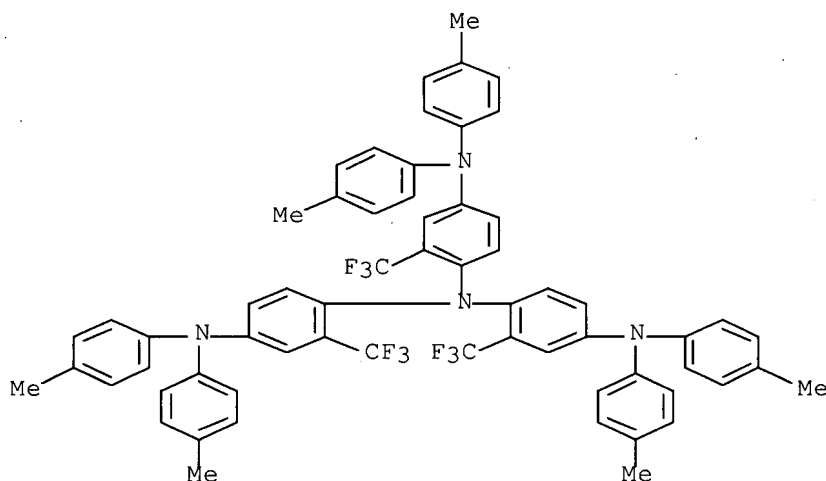
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      RL: DEV (Device component use); TEM (Technical or engineered
      material use); USES (Uses)

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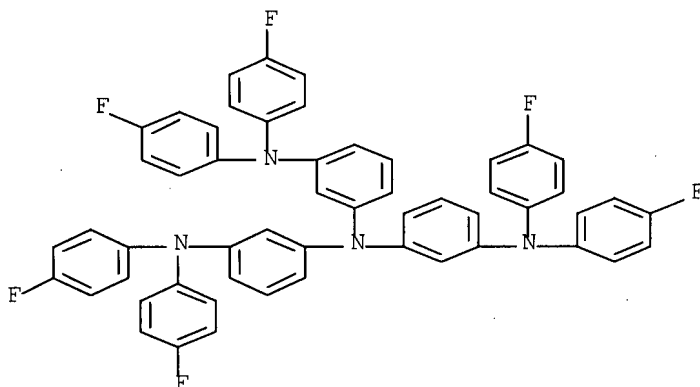
(light-emitting layer; organic EL elements containing triphenylamine-based compds. with improved brightness and durability for displays)

CN 1,4-Benzenediamine, N,N-bis[4-[bis(4-methylphenyl)amino]-2-(trifluoromethyl)phenyl]-N',N'-bis(4-methylphenyl)-2-(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 655240-63-4 HCAPLUS

CN 1,3-Benzenediamine, N,N-bis[3-[bis(4-fluorophenyl)amino]phenyl]-N',N'-bis(4-fluorophenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73

IT 405171-49-5 655240-48-5 655240-49-6 655240-50-9 655240-51-0  
655240-52-1 655240-53-2 **655240-54-3** 655240-55-4  
655240-56-5 655240-57-6

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(hole-transport layer; organic EL elements containing triphenylamine-based compds. with improved brightness and durability for displays)

IT 58328-31-7 363607-70-9 405172-39-6 405173-85-5 655240-58-7  
655240-59-8 655240-60-1 **655240-61-2** 655240-62-3  
**655240-63-4** 655240-64-5 655240-65-6

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

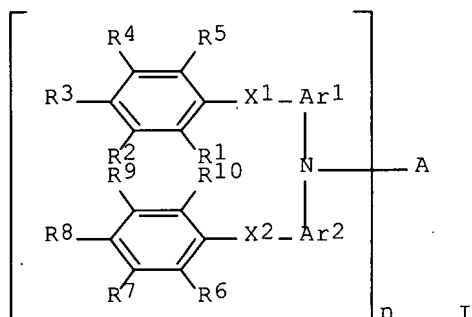
(light-emitting layer; organic EL elements containing

triphenylamine-based compds. with improved brightness and durability for displays)

L35 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1998:735541 HCAPLUS Full-text  
 DOCUMENT NUMBER: 130:58899  
 TITLE: Aromatic amine compound luminescent material and electroluminescent device with high luminance and luminescent efficiency using it  
 INVENTOR(S): Onikubo, Shunichi; Okutsu, Satoshi; Tamano, Michiko; Enokida, Toshio  
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 36 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10302960	A	19981113	JP 1997-112088	19970430
JP 3498533	B2	20040216	JP 1997-112088	19970430

PRIORITY APPLN. INFO.:  
 OTHER SOURCE(S): MARPAT 130:58899  
 GI



AB The title material comprises an aromatic amine compound described by the general formula I [ $n = 3-15$ ;  $A =$  group containing (un)substituted (condensed) aromatic or heterocyclic aromatic group;  $A \neq Q$ ;  $Ar1-2 =$  (un)substituted (condensed) aromatic group;  $X1-2 = O, S, CO, SO_2, C_xH_2xOC_yH_2y$ ; (un)substituted  $C1-20$  alkylidene, alkylene, (un)substituted divalent alicyclic group;  $x, y = 0-20$ ;  $x + y \neq 0$ ;  $R1-10 = H, \text{halo}, (\text{un})\text{substituted alkyl, alkoxy, aromatic group, heterocyclic aromatic group, amino}$ ;  $R1-5$  or  $R6-10$  may form ring]. The device has a light-emitting layer

containing I. The device showed high luminance and luminescent efficiency and long lifetime.

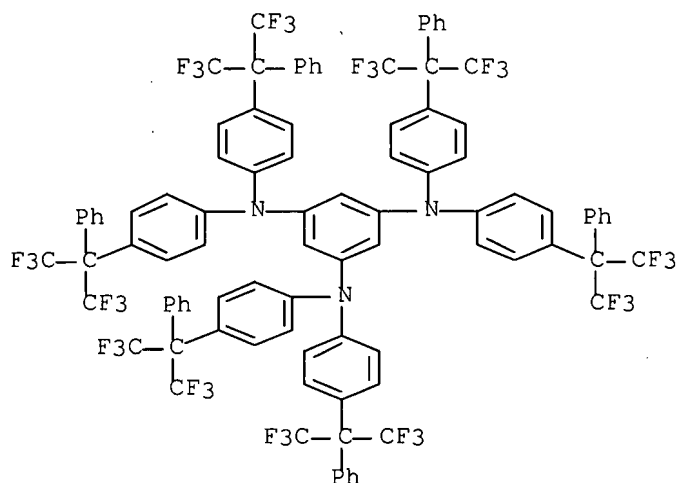
IT 209165-31-1

RL: DEV (Device component use); USES (Uses)

(aromatic amine-based emitting materials for electroluminescent devices)

RN 209165-31-1 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-hexakis[4-(2,2,2-trifluoro-1-phenyl-1-(trifluoromethyl)ethyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 76

IT 209165-07-1 209165-09-3 209165-27-5 **209165-31-1**

216974-92-4 216974-93-5 216974-94-6 216974-95-7 216974-97-9

216974-99-1 216975-00-7 216975-02-9 216975-03-0 216975-05-2

216975-07-4 216975-09-6 216975-11-0 216975-13-2 216975-17-6

216975-19-8 216975-21-2 216975-22-3 216975-23-4 216975-24-5

216975-25-6 216975-26-7 216975-27-8 216975-28-9 216975-29-0

216975-30-3 216975-31-4 216975-32-5 217086-74-3 217086-98-1

217087-26-8 217087-30-4 217087-34-8

RL: DEV (Device component use); USES (Uses)

(aromatic amine-based emitting materials for electroluminescent devices)

L35 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:398346 HCAPLUS Full-text

DOCUMENT NUMBER: 129:87816

TITLE: Material for organoelectroluminescence device and organoelectroluminescence device using the material

INVENTOR(S): Tamano, Michiko; Onikubo, Toshikazu; Okutsu, Satoshi; Enokida, Toshio

PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 26 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
EP 848579	A2	19980617	EP 1997-310157	199712 16
EP 848579	A3	19980902		
EP 848579	B1	20030326		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 10233287	A	19980902	JP 1997-301457	199711 04
JP 3606025	B2	20050105		
US 5948941	A	19990907	US 1997-990193	199712 12
PRIORITY APPLN. INFO.:			JP 1996-335217	A 199612 16
			JP 1997-301457	A 199711 04
OTHER SOURCE(S):			MARPAT 129:87816	
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Compds. suitable for use in electroluminescent devices are described by such general formula as I (A= Q, Q1, Q2; Ar1-6 = independently selected (un)substituted aryl groups; X1-6 = independently selected O, S, C:O, SO2, Si(B1)B2, N(B1), PB1, P(:O)B1-, -(CH2)x-O-(CH2)y-, (un)substituted alkylene groups, or (un)substituted alicyclic moieties; B1 and B2 = independently selected (un)substituted alkyl group or a (un)substituted aryl group), etc. The materials may be hole-injecting materials. Devices using the materials, including display devices, are also described, as is the use of the materials in the devices.

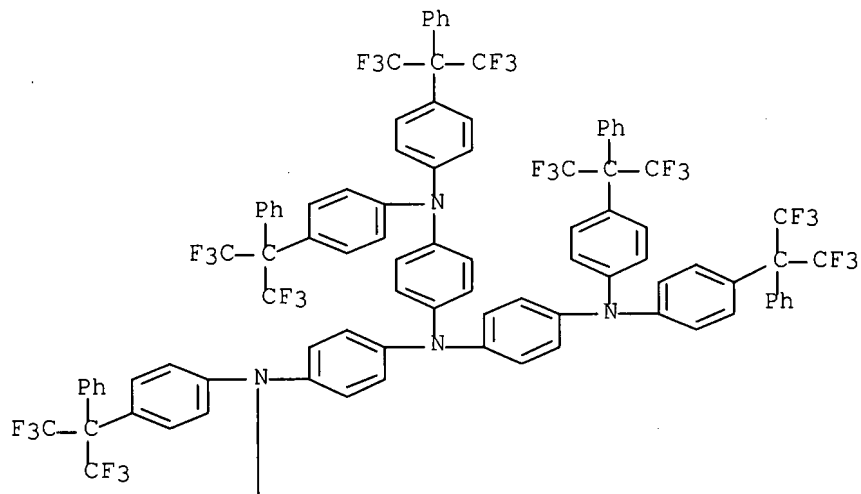
IT 209165-12-8 209165-31-1  
 RL: DEV (Device component use); USES (Uses)  
 (materials for organic electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)

RN 209165-12-8 HCAPLUS

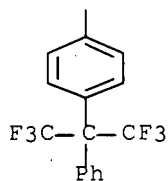
CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-[2,2,2-trifluoro-1-phenyl-1-(trifluoromethyl)ethyl]phenyl]amino]phenyl]-N',N'-bis[4-[2,2,2-trifluoro-1-phenyl-1-(trifluoromethyl)ethyl]phenyl]- (9CI) (CA INDEX NAME)



PAGE 1-A

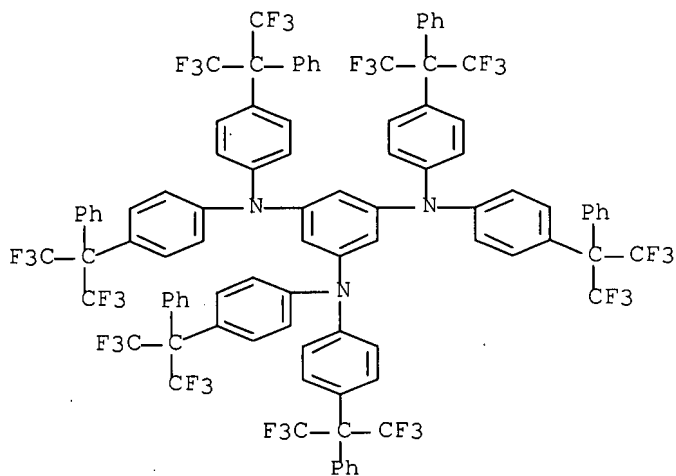


PAGE 2-A



RN 209165-31-1 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-hexakis[4-[2,2,2-trifluoro-1-phenyl-1-(trifluoromethyl)ethyl]phenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74, 76  
IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 15082-28-7  
24936-68-3, uses 123847-85-8, 4,4'-Bis(N-(1-naphthyl)-N-phenylamino)biphenyl 175395-59-2 188049-36-7 209165-05-9  
209165-06-0 209165-08-2 209165-10-6 **209165-12-8**  
209165-14-0 209165-15-1 209165-16-2 209165-17-3 209165-18-4  
209165-19-5 209165-20-8 209165-21-9 209165-22-0 209165-23-1  
209165-24-2 209165-26-4 209165-27-5 209165-28-6 209165-29-7  
**209165-31-1** 209165-32-2 209165-34-4  
RL: DEV (Device component use); USES (Uses)  
(materials for organic electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)

L35 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:747525 HCAPLUS Full-text

DOCUMENT NUMBER: 128:75007

TITLE: Models for charged organic high-spin systems; synthesis and cyclic voltammetry of one- and two-dimensional diarylaminobenzenes

AUTHOR(S): Yano, Masafumi; Furuichi, Mutsuo; Sato, Kazunobu; Shiomi, Daisuke; Ichimura, Akio; Abe, Kyo; Takui, Takeji; Itoh, Koichi

CORPORATE SOURCE: Department Chemistry, Faculty Science, Osaka City University, Osaka, 558, Japan

SOURCE: Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1997), 306, 501-506  
CODEN: MCLCE9; ISSN: 1058-725X

PUBLISHER: Gordon & Breach Science Publishers

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 128:75007

AB A series of 1,3-bis- (DABs) and 1,3,5-tris(diarylaminobenzenes (TABs) were synthesized as model precursors for polycationic  $\pi$ -conjugated high-spin systems. CV measurements at low temperature showed that the chemical stability in solution of mono- and polycationic oxidation states of the various DABs and TABs derivs. depend on their structures. Correlation between the chemical stability of these cations and their mol. structure is discussed.

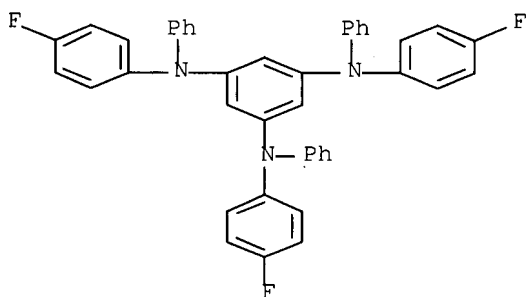
IT **177659-51-7P 189764-92-9P 189764-95-2P**

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(synthesis and cyclic voltammetry of one- and two-dimensional diarylaminobenzenes as models for charged organic high-spin systems)

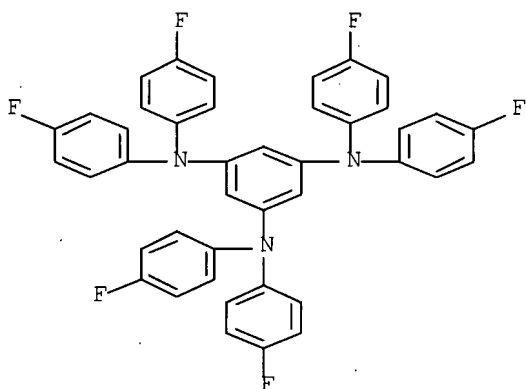
RN 177659-51-7 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris(4-fluorophenyl)-N,N',N''-triphenyl- (9CI) (CA INDEX NAME)



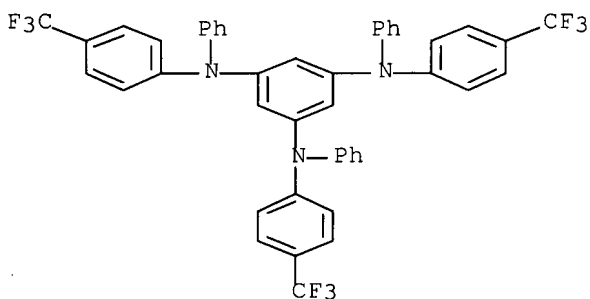
RN 189764-92-9 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-hexakis(4-fluorophenyl)-  
(9CI) (CA INDEX NAME)



RN 189764-95-2 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-triphenyl-N,N',N''-tris[4-(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



CC 22-7 (Physical Organic Chemistry)

IT 92899-33-7P 126717-23-5P 126717-25-7P 126738-30-5P  
127580-03-4P 134257-64-0P **177659-51-7P** 177659-52-8P  
186494-37-1P 186494-38-2P 186494-39-3P 186494-40-6P  
186494-41-7P 186494-42-8P 189764-91-8P **189764-92-9P**  
189764-93-0P 189764-94-1P **189764-95-2P** 200728-88-7P

200728-89-8P 200728-90-1P 200728-91-2P 200728-92-3P  
200728-93-4P 200728-94-5P 200728-95-6P 200728-96-7P  
200728-97-8P

RL: PRP (Properties); SPN (Synthetic preparation); PREP  
(Preparation)

(synthesis and cyclic voltammetry of one- and two-dimensional  
diarylamino benzenes as models for charged organic high-spin systems)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L35 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:249934 HCAPLUS Full-text

DOCUMENT NUMBER: 126:343347

TITLE: Models for positive charge fluctuation vs. spin  
polarization in organic systems; synthesis and  
cyclic voltammetry of 2D and 1D hyperbranched  
 $\pi$ -aryl-based amines

AUTHOR(S): Yano, M.; Furuichi, M.; Sato, K.; Shiomi, D.;  
Ichimura, A.; Abe, K.; Takui, T.; Itoh, K.

CORPORATE SOURCE: Department of Chemistry, Faculty of Science,  
Osaka City University, Sumiyoshi-ku, Osaka, 558,  
Japan

SOURCE: Synthetic Metals (1997), 85(1-3), 1665-1666  
CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB A series of substituted N,N,N',N',N'',N''-hexaphenyl-1,3,5- benzenetriamine (TAB)  
I (R = H, Cl, F, Me, OMe; R1 = H, Cl, F, Me, OMe, CF3) and N,N,N',N'-tetraphenyl-  
1,3-benzenediamine (DAB) II (same R; R2 = H, Me) were synthesized as models for  
pos. charged fluctuation vs. spin polarization in organic systems. CV  
measurements at low temperature showed that the chemical stability-in-solution of  
mono and poly-cationic oxidation states of the various HPTABs and TPDABs derivs.  
depend on their mol. structures and substituents.

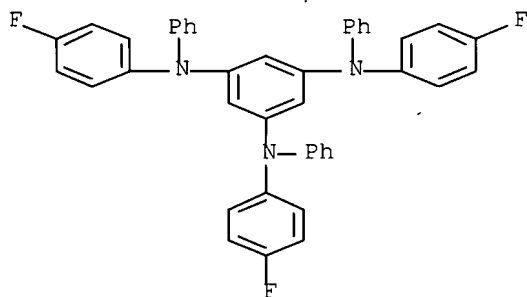
IT 177659-51-7 189764-92-9 189764-95-2

RL: PRP (Properties)

(preparation of phenylbenzenetriamines and phenylbenzenediamines as  
pos. charge fluctuation and spin polarization models)

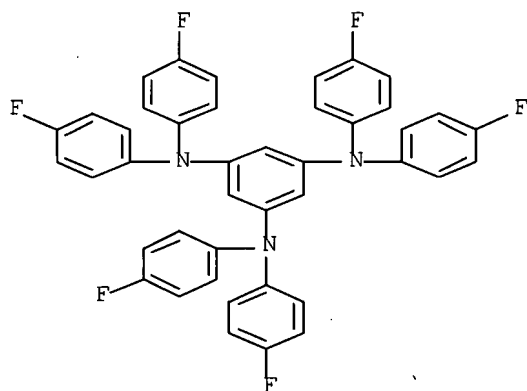
RN 177659-51-7 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris(4-fluorophenyl)-N,N',N''-  
triphenyl- (9CI) (CA INDEX NAME)



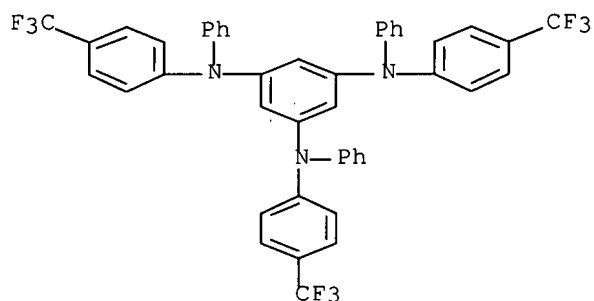
RN 189764-92-9 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-hexakis(4-fluorophenyl)-  
(9CI) (CA INDEX NAME)



RN 189764-95-2 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-tris[4-(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

Section cross-reference(s): 22

IT 126717-23-5 126717-25-7 134257-64-0 177659-51-7

177659-52-8 189764-91-8 189764-92-9 189764-93-0

189764-94-1 189764-95-2

RL: PRP (Properties)

(preparation of phenylbenzenetriamines and phenylbenzenediamines as pos. charge fluctuation and spin polarization models)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L35 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:257410 HCAPLUS Full-text

DOCUMENT NUMBER: 125:19635

TITLE: Striking effects of halogen substituents on the  
glass-forming properties, glass-transition  
temperatures and stabilities of the glassy state  
of a new family of amorphous molecular  
materials, 1,3,5-tris(4-  
halogenophenylphenylamino)benzenes

AUTHOR(S): Kageyama, Hiroshi; Itano, Koji; Ishikawa,  
Wataru; Shiota, Yasuhiko

CORPORATE SOURCE: Dep. Appl. Chem., Osaka Univ., Osaka, 565, Japan

SOURCE: Journal of Materials Chemistry (1996), 6(4),  
675-6

CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A new class of  $\pi$ -electron star-burst mols., 1,3,5-tris(4-  
halogenophenylphenylamino)benzenes, are synthesized for use as amorphous mol.  
materials. They readily form amorphous glasses, whereas the parent compound  
1,3,5-tris(diphenylamino)benzene instantly crystallizes; the ease of glass  
formation, glass-transition temperature, and stability of the glassy state are  
greatly affected by the type of halogen substituent.

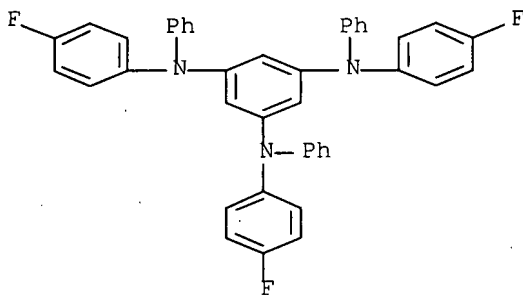
IT 177659-51-7

RL: PEP (Physical, engineering or chemical process); PRP  
(Properties); PROC (Process)

(glass formation, glass-transition temps. and stabilities of  
1,3,5-tris(4-halogenophenylphenylamino)benzene glasses)

RN 177659-51-7 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris(4-fluorophenyl)-N,N',N''-  
triphenyl- (9CI) (CA INDEX NAME)



CC 65-7 (General Physical Chemistry)

Section cross-reference(s): 69

IT 177659-51-7 177659-52-8 177659-53-9

RL: PEP (Physical, engineering or chemical process); PRP  
(Properties); PROC (Process)

(glass formation, glass-transition temps. and stabilities of

1,3,5-tris(4-halogenophenylphenylamino)benzene glasses)

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L49 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:1077993 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:376607  
 TITLE: Fluorene-based compound and organic  
**electroluminescent display**  
**device** using the same  
 INVENTOR(S): Hwang, Seok-Hwan; Lee, Seok-Jong; Kim,  
 Young-Kook; Yang, Seung-Gak; Kim, Hee-Yeon  
 PATENT ASSIGNEE(S): S. Korea  
 SOURCE: U.S. Pat. Appl. Publ., 31 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2005221124	A1	20051006	US 2005-97182	200504 04
KR 2005097670	A	20051010	<-- KR 2004-22877	200404 02
JP 2005290000	A	20051020	<-- JP 2005-106551	200504 01
CN 1702065	A	20051130	<-- CN 2005-10069765	200504 01
PRIORITY APPLN. INFO.:			<-- KR 2004-22877	A 200404 02
OTHER SOURCE(S):			<-- MARPAT 143:376607	
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB A fluorene-based compound represented by the general formula I where Z is represented by the general formula II, III, and IV, where Ar is a substituted or unsubstituted aryl group or a group by the general formula V (X = N, B or P; Y = a single bond, a (un)substituted C1-C30 alkylene group, a (un)substituted C6-C30 arylene group, a (un)substituted C4-C30 heterocyclic group; R1, R2, R3 = H, (un)substituted C1-C30 alkyl group, a (un)substituted C6-C30 aryl group, a (un)substituted C4-C30 heterocyclic group, a (un)substituted C6-C30 condensed polycyclic group, where neighboring groups among R1, R2 and R3 are connected to

each other to form a (un)saturated carbon ring; R', R'' = H, a hydroxy group, a (un)substituted C1-C30 alkyl group, a (un)substituted C6-C30 aryl group) is described. An organic **electroluminescent display device** comprising two electrodes; and an organic layer interposed between the electrodes, wherein the organic layer comprises the fluorene-based compound is also described.

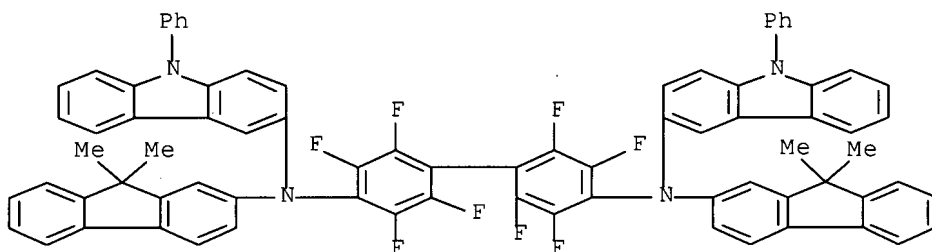
IT **866119-47-3P**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(fluorene-based compound and organic **electroluminescent display device** using the same)

RN 866119-47-3 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis(9,9-dimethyl-9H-fluoren-2-yl)-2,2',3,3',5,5',6,6'-octafluoro-N,N'-bis(9-phenyl-9H-carbazol-3-yl)-(9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; C07D209-82; C07F005-02; C07F009-02

INCL 428690000; 428917000; 313504000; 313506000; 548440000; 548442000; 564427000; 568001000; 568017000

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 22, 73, 76

ST fluorene org compd **electroluminescent display device**

IT **Electroluminescent devices**

(displays; fluorene-based compound and organic **electroluminescent display device** using the same)

IT Luminescent **screens**

Luminescent substances

(**electroluminescent**; fluorene-based compound and organic **electroluminescent display device** using the same)

IT 2085-33-8, Alq3

RL: DEV (Device component use); USES (Uses)

(electron transport layer; fluorene-based compound and organic **electroluminescent display device** using the same)

IT 50926-11-9, Indium tin oxide

RL: DEV (Device component use); USES (Uses)

(fluorene-based compound and organic **electroluminescent display device** using the same)

IT 1150-62-5P 3096-56-8P 400607-31-0P 474918-32-6P 502161-03-7P  
736928-22-6P 736928-23-7P 866119-49-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(fluorene-based compound and organic **electroluminescent**



**display device** using the same)

IT 866119-12-2P 866119-13-3P 866119-14-4P 866119-15-5P  
866119-16-6P 866119-17-7P 866119-18-8P 866119-19-9P  
866119-20-2P 866119-21-3P 866119-22-4P 866119-23-5P  
866119-24-6P 866119-25-7P 866119-26-8P 866119-27-9P  
866119-28-0P 866119-29-1P 866119-30-4P 866119-31-5P  
866119-32-6P 866119-33-7P 866119-34-8P 866119-35-9P  
866119-36-0P 866119-37-1P 866119-38-2P 866119-39-3P  
866119-40-6P 866119-41-7P 866119-42-8P 866119-43-9P  
866119-44-0P 866119-45-1P 866119-46-2P **866119-47-3P**  
866119-48-4P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(fluorene-based compound and organic **electroluminescent display device** using the same)

IT 71-43-2, Benzene, reactions 86-74-8, 9H-Carbazole 108-86-1, reactions 873-74-5 1133-80-8

RL: RCT (Reactant); RACT (Reactant or reagent)  
(fluorene-based compound and organic **electroluminescent display device** using the same)

IT 94928-86-6

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(green phosphor dopant; fluorene-based compound and organic **electroluminescent display device** using the same)

IT 123847-85-8, NPB 627090-84-0, IDE 406

RL: DEV (Device component use); USES (Uses).  
(hole injection layer; fluorene-based compound and organic **electroluminescent display device** using the same)

IT 58328-31-7, CBP

RL: DEV (Device component use); USES (Uses)  
(phosphor host; fluorene-based compound and organic **electroluminescent display device** using the same)

IT 866186-51-8, RD 61

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(red phosphor; fluorene-based compound and organic **electroluminescent display device** using the same)

L49 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:522753 HCAPLUS Full-text

DOCUMENT NUMBER: 143:34938

TITLE: Organic **electroluminescent device** for optical **display** and **illumination apparatus**

INVENTOR(S): Kato, Eisaku; Ueda, Noriko; Fukuda, Mitsuhiro; Oshiyama, Tomohiro; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 51 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005158289

A

20050616

JP 2003-390913

200311  
20

&lt;--

PRIORITY APPLN. INFO.:

JP 2003-390913

200311  
20

&lt;--

OTHER SOURCE(S): MARPAT 143:34938

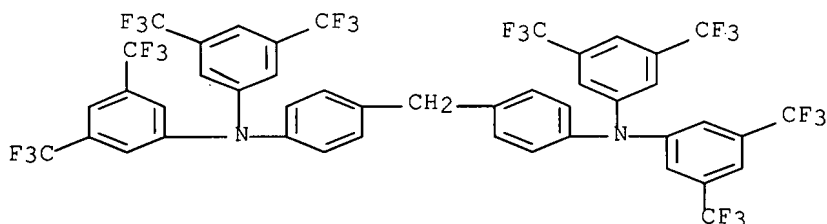
AB The invention relates to an organic **electroluminescent device**, suited for use in making an optical **display** and an **illumination apparatus**, comprising the organic compound represented by Ar1-L-Ar2 [Ar1 and Ar2 = aryl and aromatic heterocyclic groups; and L = alkylene]. The organic compound is used as a host material of a phosphorescent guest, a hole blocking material, and a hole transporting material.

IT 853016-95-2

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** for optical  
**display** and **illumination apparatus**)

RN 853016-95-2 HCAPLUS

CN Benzenamine, 4,4'-methylenebis[N,N-bis(3,5-  
bis(trifluoromethyl)phenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)

ST org **electroluminescent device** optical**display illumination app**IT **Illumination**

(**apparatus**; organic **electroluminescent device**  
for optical **display** and **illumination**  
**apparatus**)

IT **Electroluminescent devices****Optical imaging devices**

(organic **electroluminescent device** for optical  
**display** and **illumination apparatus**)

IT 58473-78-2 160176-63-6 853016-93-0 853016-94-1  
853016-95-2 853016-96-3 853016-97-4 853016-98-5  
853016-99-6 853017-00-2 853017-01-3

RL: DEV (Device component use); USES (Uses)

(organic **electroluminescent device** for optical  
**display** and **illumination apparatus**)

IT 607731-64-6P 848724-46-9P 848724-49-2P 848724-55-0P  
848724-57-2P 848724-60-7P 853017-02-4P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)

(organic **electroluminescent** device for optical  
**display** and **illumination apparatus**)

IT 101-77-9 13029-09-9

RL: RCT (Reactant); RACT (Reactant or reagent)

(organic **electroluminescent** device for optical  
**display** and **illumination apparatus**)

L49 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:802182 HCAPLUS Full-text

DOCUMENT NUMBER: 141:322678

TITLE: Organic **electroluminescent** element,  
**illuminator**, and **display**INVENTOR(S): Suzuri, Yoshiyuki; Kita, Hiroshi; Oshiyama,  
Tomohiro; Fukuda, Mitsuhiro; Ueda, Noriko

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 63 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004189190	A1	20040930	US 2004-804788	20040319
EP 1464691	A2	20041006	EP 2004-6649	20040319
JP 2004311424	A	20041104	JP 2004-84609	20040323
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
PRIORITY APPLN. INFO.: JP 2003-85023 A				20030326

OTHER SOURCE(S): MARPAT 141:322678

AB Disclosed are an organic **electroluminescent** element comprising a **light emission** layer containing a phosphorescent compound and a hole transporting layer adjacent thereto containing a hole transporting material, wherein the hole transporting material has a 0-0 band of the phosphorescence spectra of from 300 to 450 nm and has a mol. weight of not less than 550, and an **illuminator** and a **display** each comprising the organic **electroluminescent** element.

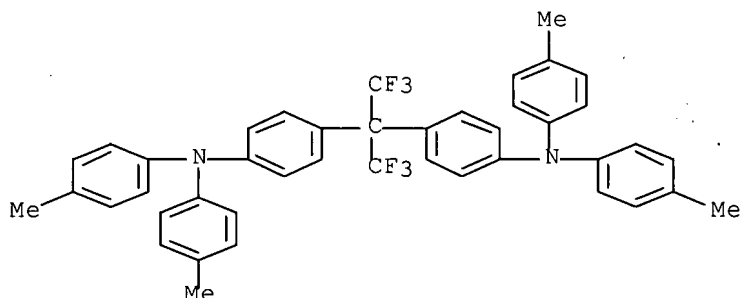
IT 149685-52-9

RL: DEV (Device component use); USES (Uses)

(organic **electroluminescent** element containing phosphorescent  
compound and hole-transporting compound)

RN 149685-52-9 HCAPLUS

CN Benzenamine, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis  
[N,N-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)]



IC ICM H05B033-14  
ICS F21V009-16  
INCL 313504000  
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
ST org **electroluminescent display** phosphorescent  
compd hole transporting material  
IT **Electroluminescent devices**  
(displays; organic **electroluminescent** element  
containing phosphorescent compound and hole-transporting compound)  
IT **Luminescent screens**  
(**electroluminescent**; organic  
**electroluminescent** element containing phosphorescent compound  
and hole-transporting compound)  
IT 2085-33-8, Alq3 4733-39-5 58328-31-7 58473-78-2 61526-94-1  
123847-85-8 **149685-52-9** 178331-01-6 263722-47-0  
405171-87-1 612519-55-8 693794-98-8 765943-77-9 765943-79-1  
765943-81-5 765943-83-7 765943-85-9 765943-87-1 765943-89-3  
765943-90-6  
RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent** element containing phosphorescent  
compound and hole-transporting compound)

L49 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2004:512434 HCAPLUS Full-text  
DOCUMENT NUMBER: 141:79431  
TITLE: Polymer involving N,N-aryl-substituted amino  
group for organic **electroluminescent**  
**device** and the **device** itself  
INVENTOR(S): Kato, Shinji  
PATENT ASSIGNEE(S): Kawamura Institute of Chemical Research, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 35 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004175869	A	20040624	JP 2002-342124	200211 26

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PRIORITY APPLN. INFO.:

JP 2002-342124

200211

26

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\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

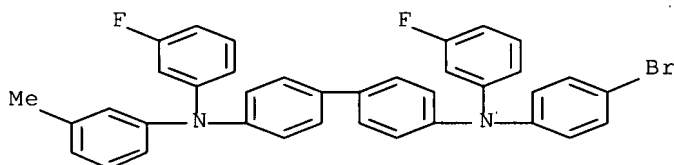
AB The polymer with d.p. 3-500 is that represented as  $(\text{CH}_2\text{CHA})_m[\text{CH}_2\text{C}(\text{CO}_2\text{H})(\text{CH}_2\text{CO}_2\text{R})]_n$  (A = N,N-diphenylaminophenyl group, 9-carbazolyl group I, II, III; Xs are H, halogen, alkyl, etc.; R = H, C1-22 alkyl; m:n is 1:1-4:1), whose terminals are radical polymerization initiator residue or H. The polymer is manufactured by radical polymerization of  $\text{CH}_2\text{:CHA}$  and  $\text{CH}_2\text{C}(\text{CH}_2\text{CO}_2\text{R})\text{CO}_2\text{H}$  (A, R are the same as above). The **electroluminescent device** is that having an anode, a pos. hole-transporting layer made of the polymer, a **light -emitting layer**, and a cathode formed on a substrate in this order. The **electroluminescent device** is manufactured by a process involving (a) contacting of an anode on a substrate with a solution containing amino-containing coupler and (b) contacting of the treated surface with a solution of the polymer. The device shows enhanced adhesion of the pos. hole-transporting layer with the anode and high luminance under low elec. voltage.

IT 220716-58-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent) (intermediate; **electroluminescent display** using polymer involving aryl-substituted amino group from)

RN 220716-58-5 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-(4-bromophenyl)-N,N'-bis(3-fluorophenyl)-N'-(3-methylphenyl)- (9CI) (CA INDEX NAME)

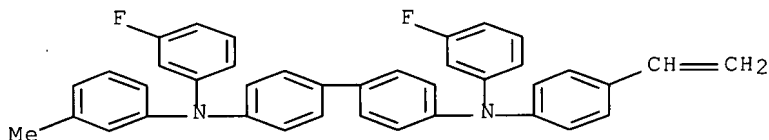


IT 220716-62-1P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent) (monomer; **electroluminescent display** using polymer involving aryl-substituted amino group)

RN 220716-62-1 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-(4-ethenylphenyl)-N,N'-bis(3-fluorophenyl)-N'-(3-methylphenyl)- (9CI) (CA INDEX NAME)



IC ICM C08F212-14  
ICS C08F226-12; H05B033-10; H05B033-14; H05B033-22; C08F222-02  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 38  
ST aryl substituted amino contg polymer **electroluminescence**;  
**electroluminescent device** polymer pos hole  
transporting; diphenylaminophenyl substituted itaconic acid polymer;  
carbazolyl substituted itaconic acid polymer; coupler adhesion pos  
hole transporting layer anode  
IT Coupling agents  
(amino-containing; in manufacture of **electroluminescent**  
**display** using polymer involving aryl-substituted amino  
group for pos. hole-transporting layer)  
IT **Electroluminescent devices**  
(polymer involving aryl-substituted amino group for pos.  
hole-transporting layer in organic **electroluminescent**  
**device**)  
IT 13822-56-5, 3-Aminopropyltrimethoxysilane  
RL: NUU (Other use, unclassified); USES (Uses)  
(coupler; in manufacture of **electroluminescent**  
**display** using polymer involving aryl-substituted amino  
group for pos. hole-transporting layer)  
IT 92-86-4, 4,4'-Dibromobiphenyl 104-94-9, p-Methoxyaniline  
106-37-6, 1,4-Dibromobenzene 108-44-1, 3-Methylaniline, reactions  
372-19-0, m-Fluoroaniline 591-17-3, 3-Bromotoluene 1205-64-7  
7486-35-3, Tributylvinyltin  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(**electroluminescent display** using polymer  
involving aryl-substituted amino group from)  
IT 204327-05-9P 207345-05-9P 220716-53-0P 220716-54-1P  
220716-56-3P 220716-57-4P **220716-58-5P**  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(intermediate; **electroluminescent display**  
using polymer involving aryl-substituted amino group from)  
IT 220716-60-9P **220716-62-1P** 220716-63-2P 227176-02-5P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(monomer; **electroluminescent display** using  
polymer involving aryl-substituted amino group)  
IT 709044-63-3P 709044-64-4P 709044-66-6P 709044-67-7P  
709044-68-8P  
RL: IMF (Industrial manufacture); TEM (Technical or engineered  
material use); PREP (Preparation); USES (Uses)  
(polymer involving aryl-substituted amino group for pos.  
hole-transporting layer in organic **electroluminescent**  
**device**)

L49 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:277750 HCAPLUS Full-text

DOCUMENT NUMBER: 141:44228

TITLE: A Raman and DFT study of substituted  
triphenylamines for use as charge transfer  
materials in **light emitting**  
polymers

AUTHOR(S): Littleford, R. E.; Tackley, D. R.; Cherryman, J.  
C.; Dent, G.; Smith, W. E.

CORPORATE SOURCE: Department of Pure and Applied Chemistry,  
University of Strathclyde, Glasgow, G1 1 XL, UK  
SOURCE: Journal of Molecular Structure (2004),  
692(1-3), 81-90  
CODEN: JMOSB4; ISSN: 0022-2860  
PUBLISHER: Elsevier Science B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB **Light emitting** polymers (LEPs) are poised to become the predominant **display** technol. within this decade. Charge transfer materials (CTMs) within these LEPs are important as they aid the efficiency of the **electroluminescence** emitted from the **devices**. Since many of these materials are strong Raman scatterers, Raman microscopy would provide an ideal method for investigating CTMs in-situ in the polymer matrix. The Raman spectra of the widely used CTMs based on triphenylamines are assigned for three different substituted monomers and for selected dimers and trimers. Theor. calcns. using the hybrid BPW91 functional and split-valence polarized 6G(d) basis set were performed, and the Raman scattering frequencies calculated and compared with those from exptl. materials. A good correlation was found between the computed and exptl. frequencies for the monomers. The largest deficit was 29 cm<sup>-1</sup> for any clearly assigned band, and there was an average error of 9.4 cm<sup>-1</sup> for the five most intense bands. The exptl. Raman spectrum of the dimer dimethyltriphenyldiamine (DMTPD) and the calculated Raman active vibrations of methyltriphenyldiamine (MTPD) show few significant changes compared to the monomer. Comparison of the exptl. trimer spectra with monomer calcns. also show that simplified DFT calcns. may confidently be used for assigning many bands in larger polymeric CTMs.

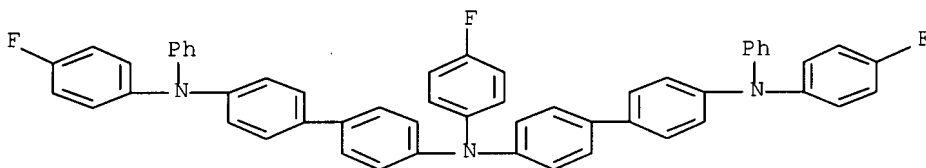
IT 701976-07-0

RL: PRP (Properties)

(Raman and DFT study of substituted triphenylamines for use as charge transfer materials in **light emitting** polymers)

RN 701976-07-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis(4-fluorophenyl)-N-[4'-[(4-fluorophenyl)phenylamino][1,1'-biphenyl]-4-yl]-N'-phenyl- (9CI) (CA INDEX NAME)



CC 73-3 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST Raman substituted triphenylamine charge transfer material  
**light emitting** polymer; density functional theory  
Raman triphenylamine deriv **light emitting** polymer

IT Density functional theory

Molecular vibration

Raman spectra

Resonance Raman spectra

(Raman and DFT study of substituted triphenylamines for use as charge transfer materials in **light emitting**

polymers)  
 IT **Electroluminescent devices**  
 (displays; Raman and DFT study of substituted  
 triphenylamines for use as charge transfer materials in  
 light emitting polymers in relation to)  
 IT Luminescent **screens**  
 Luminescent substances  
 (electroluminescent; Raman and DFT study of substituted  
 triphenylamines for use as charge transfer materials in  
 light emitting polymers in relation to)  
 IT 437-25-2 603-34-9, Triphenylamine 1228-80-4 122738-25-4  
 134917-81-0 701976-07-0 701976-08-1  
 RL: PRP (Properties)  
 (Raman and DFT study of substituted triphenylamines for use as  
 charge transfer materials in light emitting  
 polymers)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L49 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:267213 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:312117  
 TITLE: Organic **electroluminescent**  
**display device** and method for  
 manufacturing the same  
 INVENTOR(S): Iwanaga, Hiroki  
 PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan  
 SOURCE: U.S. Pat. Appl. Publ., 20 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004062950	A1	20040401	US 2003-611248	20030702
US 7186468	B2	20070306		
JP 2004127528	A	20040422	JP 2002-285538	20020930
PRIORITY APPLN. INFO.:			JP 2002-285538	20020930
OTHER SOURCE(S):				
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



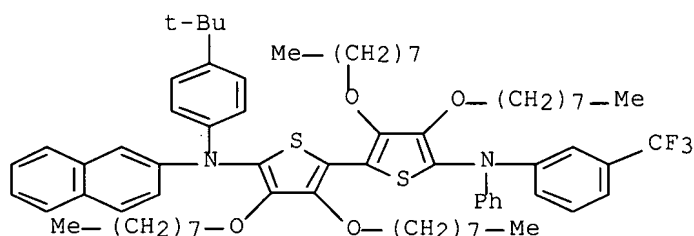
AB There is disclosed an organic **EL display device** comprising a transparent electrode, a counter electrode spaced away from the transparent electrode, a **light emitting** layer interposed between the transparent electrode and the counter electrode, and a hole transferring layer interposed between the transparent electrode and the **light emitting** layer. This hole transferring layer comprises a triaryl amine compound which can be represented by any one of the following general formulas I, II, III, IV.

IT 676464-68-9

RL: TEM (Technical or engineered material use); USES (Uses)  
(manufacturing organic **electroluminescent display device** containing)

RN 676464-68-9 HCAPLUS

CN [2,2'-Bithiophene]-5,5'-diamine, N-[4-(1,1-dimethylethyl)phenyl]-N-2-naphthalenyl-3,3',4,4'-tetrakis(octyloxy)-N'-phenyl-N'-[3-(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-12

INCL 428690000; 428917000; 313504000; 313506000; 430319000

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST org **electroluminescent display device**  
manufg

IT **Electroluminescent devices**

(displays; manufacturing organic **electroluminescent display device**)

IT Luminescent screens

(**electroluminescent**; manufacturing organic **electroluminescent display device**)

IT 676464-64-5 676464-65-6 676464-66-7 676464-67-8  
676464-68-9 676464-69-0

RL: TEM (Technical or engineered material use); USES (Uses)  
(manufacturing organic **electroluminescent display device** containing)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L49 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:118661 HCAPLUS Full-text

DOCUMENT NUMBER: 140:172300

TITLE: Organic **electroluminescent** elements  
with improved brightness and durability and  
**displays** using them

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Oshiyama,  
Tomohiro; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 43 pp.

CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004047442	A	20040212	JP 2003-132872	20030512
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PRIORITY APPLN. INFO.:			JP 2002-138307	A 20020514
<--				

OTHER SOURCE(S): MARPAT 140:172300

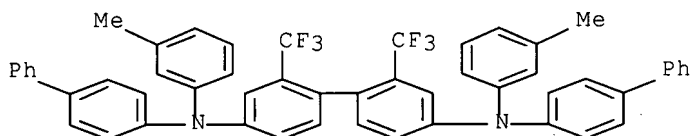
AB The elements contain R1R2NQ1Q2NR3R4 [R1-4 = (un)substituted Ph; Q1,2 = (un)substituted p-phenylene; Q1 = Q2 ≠ p-phenylene], preferably in hole-transport layers. The elements may have **light-emitting** layers containing phosphorescent complexes of Group VIII metals (Os, Ir, or Pt, preferably) and ≥1 fluorescent compds. having maximum fluorescence wavelength longer than maximum emission wavelength of the complexes.

IT 655236-08-1

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (hole-transport layer; organic **EL** elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)

RN 655236-08-1 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis([1,1'-biphenyl]-4-yl)-N,N'-bis(3-methylphenyl)-2,2'-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73

ST org **electroluminescent** element hole transporter  
 tetraphenylbenzidine; **EL display** iridium  
 phosphor dopant durability; phenylbenzidine host org **EL display** brightness

IT **Electroluminescent devices**

(**displays**; organic **EL** elements containing tetraphenylbenzidine-based compds. with improved brightness and durability for **displays**)

IT Group VIII element complexes

RL: DEV (Device component use); MOA (Modifier or additive use); TEM

(Technical or engineered material use); USES (Uses)  
 (dopant, **light-emitting** layer; organic  
**EL** elements containing tetraphenylbenzidine-based compds.  
 with improved brightness and durability for **displays**)

IT **Luminescent screens**

Phosphors

(**electroluminescent**; organic **EL**  
 elements containing tetraphenylbenzidine-based compds. with improved  
 brightness and durability for **displays**)

IT 31248-39-2 94928-86-6 337526-85-9 337526-98-4 343978-78-9  
 343978-79-0 370878-74-3 376367-95-2 474948-19-1 500295-32-9  
 562043-95-2

RL: DEV (Device component use); MOA (Modifier or additive use); TEM  
 (Technical or engineered material use); USES (Uses)

(dopant, **light-emitting** layer; organic  
**EL** elements containing tetraphenylbenzidine-based compds.  
 with improved brightness and durability for **displays**)

IT 478370-39-7 655236-05-8 655236-07-0 **655236-08-1**  
 655236-10-5 655236-11-6 655236-12-7

RL: DEV (Device component use); TEM (Technical or engineered  
 material use); USES (Uses)

(hole-transport layer; organic **EL** elements containing  
 tetraphenylbenzidine-based compds. with improved brightness and  
 durability for **displays**)

IT 453590-46-0 478262-76-9 478370-42-2 655236-06-9 655236-09-2  
 655236-13-8

RL: DEV (Device component use); TEM (Technical or engineered  
 material use); USES (Uses)

(hole-transport or **light-emitting** layer; organic  
**EL** elements containing tetraphenylbenzidine-based compds.  
 with improved brightness and durability for **displays**)

IT 58328-31-7 453590-45-9 478262-77-0 478370-41-1 655236-14-9  
 655236-15-0 655236-16-1 655236-17-2

RL: DEV (Device component use); TEM (Technical or engineered  
 material use); USES (Uses)

(**light-emitting** layer; organic **EL**  
 elements containing tetraphenylbenzidine-based compds. with improved  
 brightness and durability for **displays**)

L49 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:374064 HCAPLUS Full-text

DOCUMENT NUMBER: 138:376535

TITLE: Organic **electroluminescent**  
**display** having red **light-**  
**emitting** layer

INVENTOR(S): Oh, Hyoung Yun; Lee, Sung Koo; Park, Chung Gun;  
 Seo, Jeong Dea; Kim, Myung Seop

PATENT ASSIGNEE(S): LG Electronics Co., Ltd., S. Korea

SOURCE: Jpn. Kokai Tokkyo Koho, 31 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003142269	A	20030516	JP 2002-293373	200210

07

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KR 2003035283 A 20030509 KR 2001-67267

200110  
30

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US 2003118866 A1 20030626 US 2002-254999

200209  
26

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EP 1317005 A2 20030604 EP 2002-23135

200210  
15

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK  
CN 1416301 A 20030507 CN 2002-148125

200210  
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PRIORITY APPLN. INFO.: KR 2001-67267 A

200110  
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OTHER SOURCE(S): MARPAT 138:376535

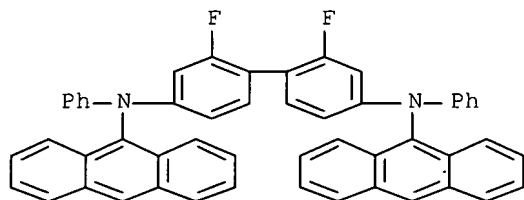
AB The **display** has a red **light-emitting** layer between electrodes, and the layer contains a guest substance of red-emitting substance and  $\geq 2$  host substances. Preferably, one of the host substances is a (substituted) quinoline derivative or a compound represented by  $(L1L2N)m-z-(NL3L4)n$  [ $m + n = 1-8$ ;  $z = A1, A2QA3$ ;  $A1 =$  (substituted) aromatic hydrocarbylene, heterocyclic group, aliphatic hydrocarbylene;  $A2-3 =$  (substituted) aromatic hydrocarbylene, heterocyclic group,;  $A1-3$  are connected to N via aliphatic hydrocarbylene, amido, or imine;  $Q =$  (substituted) aromatic hydrocarbylene, heterocyclic ring, aliphatic hydrocarbylene, Group IIIA, IVA, VA, or VIA element; Q is connected to  $A2-3$  via (substituted) aliphatic hydrocarbylene, Group IIIA, IVA, VA, or VIA element, amido, ester, carbonyl, azo, imine;  $L1-4 =$  (substituted) aromatic hydrocarbyl, heterocyclic group, aliphatic hydrocarbyl; silyl, H]. The **display emits red light** with high luminescent efficiency.

IT 522652-95-5 522652-98-8

RL: DEV (Device component use); USES (Uses)  
(host; organic **electroluminescent display** having  
red **light-emitting** layer containing host  
substances for high luminescent efficiency)

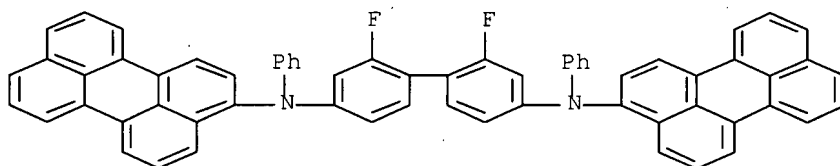
RN 522652-95-5 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-9-anthracenyl-2,2'-difluoro-  
N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN 522652-98-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, 2,2'-difluoro-N,N'-di-3-perylenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST org **electroluminescent display** red light  
emitting substance; host guest red emitting substance  
**electroluminescent display**

IT **Electroluminescent devices**  
(displays; organic **electroluminescent display** having red light-emitting layer containing host substances for high luminescent efficiency)

IT **Luminescent screens**  
(electroluminescent; organic **electroluminescent display** having red light-emitting layer containing host substances for high luminescent efficiency)

IT **Luminescent substances**  
(organic **electroluminescent display** having red light-emitting layer containing host substances for high luminescent efficiency)

IT 91-64-5D, Coumarin, derivs. 226-05-1D, 7H-Benzo[c]thioxanthene, derivs. 7385-67-3D, Nile red, derivs. 13558-31-1D, derivs. 51325-91-8D, DCM, derivs. 54300-60-6D, Pyrromethene, derivs. 200052-70-6  
RL: DEV (Device component use); USES (Uses)  
(guest; organic **electroluminescent display** having red light-emitting layer containing host substances for high luminescent efficiency)

IT 2085-33-8, Alq3 13978-85-3 25387-93-3 62556-02-9 67952-28-7, Magnesium 8-hydroxyquinolate 127697-06-7 127697-08-9  
138685-19-5 139255-20-2 177799-11-0 177799-16-5 220721-66-4  
220721-68-6 223735-42-0 223735-62-4 227013-26-5 252755-19-4  
253867-48-0 340162-05-2 473717-08-7 522652-78-4 522652-79-5  
522652-80-8 522652-81-9 522652-82-0 522652-83-1 522652-84-2  
522652-85-3 522652-86-4 522652-87-5 522652-88-6 522652-89-7  
522652-90-0 522652-91-1 522652-92-2 522652-93-3 522652-94-4  
**522652-95-5 522652-96-6 522652-98-8**  
522652-99-9 522653-00-5 522653-01-6 522653-02-7 522653-03-8  
522653-04-9 522653-05-0 522653-06-1 522653-07-2 522653-08-3  
522653-09-4 522653-10-7 522653-11-8 522653-12-9 522653-13-0  
522653-14-1 522653-15-2 522653-16-3 522653-17-4 522653-18-5  
522653-19-6 522653-20-9 522653-21-0 522653-22-1  
RL: DEV (Device component use); USES (Uses)  
(host; organic **electroluminescent display** having red light-emitting layer containing host substances for high luminescent efficiency)

IT 177799-14-3P 227009-35-0P 522652-77-3P 522652-97-7P  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(host; organic **electroluminescent display** having red **light-emitting** layer containing host substances for high luminescent efficiency)

IT 23683-68-3P 36809-26-4P 201802-67-7P  
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(organic **electroluminescent display** having red **light-emitting** layer containing host substances for high luminescent efficiency)

IT 90-30-2, N-Phenyl-1-naphthylamine 106-40-1, p-Bromoaniline  
 121-43-7, Trimethylborate 122-39-4, Diphenylamine, reactions  
 198-55-0, Perylene 523-27-3, 9,10-Dibromoanthracene 591-50-4,  
 Iodobenzene 4181-05-9, 4-Diphenylaminobenzaldehyde 57191-89-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)

(organic **electroluminescent display** having red **light-emitting** layer containing host substances for high luminescent efficiency)

L49 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:565666 HCAPLUS Full-text

DOCUMENT NUMBER: 137:390986

TITLE: Photocrosslinkable polymers as hole-transport materials for organic **light-emitting** diodes

AUTHOR(S): Domercq, Benoit; Hrera, Richard D.; Larribeau, Nathalie; Haddock, Joshua N.; Marder, Seth R.; Kippelen, Bernard

CORPORATE SOURCE: Optical Sciences Center/University of Arizona, Tucson, AZ, 85721, USA

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2002), 4642(Organic Photonic Materials and Devices IV), 88-96

CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical Engineering

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of soluble arylamine-based hole transporting polymers with glass transition temps. in the range of 97-108° C have been synthesized. The synthetic methodol. allows substitution of the aryl groups on the amine with electron-withdrawing and electron-donating moieties, which permits tuning of the redox potential of the polymer. The TPD-based monomers have been copolymd. with cinnamate-based moieties to obtain photocrosslinkable polymers. These polymers have been used as hole-transport layers (HTLs) in multi-layer **light-emitting** diodes ITO/HTL/AlQ3/Mg:Ag [ITO = indium tin oxide, AlQ3 = tris(8-hydroxyquinolino)aluminum]. The maximum external quantum efficiency of the device increases as the redox potential of the HTL is increased. A fluorinated hole-transport polymer with a relatively high oxidation potential (390 mV vs ferrocenium/ferrocene) yielded the device with the highest external quantum efficiency and the longest lifetime under constant current operation. UV crosslinking was optimized to obtain an insol. hole-transport layer with stable performance. Processing of these materials is compatible with a standard mask aligner used for photolithog. **Electroluminescent devices** have also been fabricated by spinning a blend of polystyrene and AlQ3 on top of the crosslinked hole-transport layer.

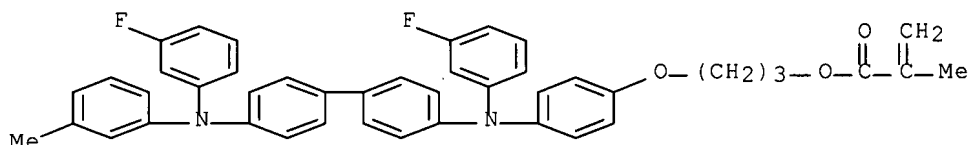
IT 433716-29-1 433716-30-4

RL: RCT (Reactant); RACT (Reactant or reagent)

(monomer; polymerization with cinnamate acrylate monomer in preparation of hole-transport polymers for organic light-emitting diodes)

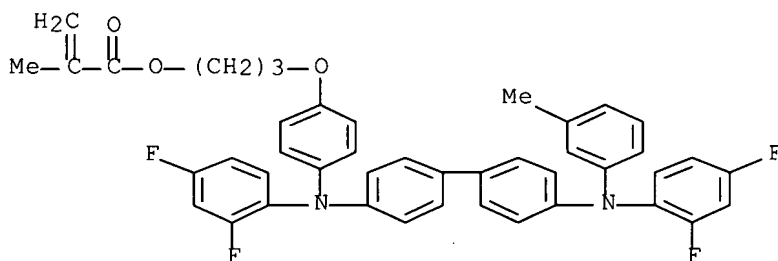
RN 433716-29-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-[4-[(3-fluorophenyl)[4'-[(3-fluorophenyl)(3-methylphenyl)amino][1,1'-biphenyl]-4-yl]amino]phenoxy]propyl ester (9CI) (CA INDEX NAME)



RN 433716-30-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-[4-[(2,4-difluorophenyl)[4'-[(2,4-difluorophenyl)(3-methylphenyl)amino][1,1'-biphenyl]-4-yl]amino]phenoxy]propyl ester (9CI) (CA INDEX NAME)



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST photocrosslinking triarylamino acrylate cinnamate polymer hole transport **OLED display; light emitting diode** photocrosslinking polymer hole transport material

IT **Electroluminescent devices**

(**OLED**; performance of organic **light-emitting** diodes containing photocrosslinkable acrylate hole-transport polymers)

IT **Electroluminescent devices**

(**displays, OLED**; performance of organic **light-emitting** diodes containing photocrosslinkable acrylate hole-transport polymers)

IT Luminescent **screens**

(**electroluminescent, OLED**; performance of organic **light-emitting** diodes containing photocrosslinkable acrylate hole-transport polymers)

IT Crosslinking

(photochem.; hole-transport polymers containing substituted bis(diarylamino)biphenyl acrylate and cinnamate acrylate monomers for organic **light-emitting** diodes)

IT Ionization potential

(photocrosslinkable acrylate hole-transport polymers and their performance in organic **light-emitting** diodes)

IT Photolithography  
(photocrosslinkable acrylate hole-transport polymers suitable for photolithog. patterning and fabrication of organic **light-emitting** diodes)

IT 433716-27-9 433716-28-0 433716-29-1 433716-30-4  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(monomer; polymerization with cinnamate acrylate monomer in preparation of hole-transport polymers for organic **light-emitting** diodes)

IT 9003-53-6, Polystyrene  
RL: DEV (Device component use); USES (Uses)  
(performance of **electroluminescent devices** containing photocrosslinkable acrylate hole-transport polymers and polystyrene/tris(hydroxyquinolinato)aluminum blend as top layer)

IT 2085-33-8, AlQ3 50926-11-9, ITO  
RL: DEV (Device component use); USES (Uses)  
(performance of organic **light-emitting** diodes containing photocrosslinkable acrylate hole-transport polymers)

IT 475659-80-4P 475659-82-6P 475659-83-7P 475659-84-8P  
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
(photocrosslinking of acrylate hole-transport polymers and their performance in organic **light-emitting** diodes)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L49 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:229711 HCAPLUS Full-text

DOCUMENT NUMBER: 137:13164

TITLE: Polymers for holographic imaging and **displays**

AUTHOR(S): Kippelen, Bernard; Domercq, Benoit; Herlocker, Jon A.; Hrera, Richard D.; Haddock, Joshua N.; Fuentes-Hernandez, Canek; Ramos-Ortiz, Gabriel; Blanche, Pierre A.; Peyghambarian, Nasser; Schulzgen, Axel; Zhang, Yadong; Marder, Seth R.

CORPORATE SOURCE: Optical Sci. Center, Univ. Arizona, Tucson, AZ, 85721, USA

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(1), 158-159

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB Several novel photorefractive polymers that are sensitized by two-photon absorption have been developed. Holog. recording via four-wave mixing was performed in photorefractive polymer composite which consists of poly(vinylcarbazole) photoconducting matrix, an electroactive chromophore, N-ethylcarbazole and benzylbutyl phthalate plasticizers. Photorefractive polymers were also fabricated by injection molding, demonstrating the possible mass-production of such materials using standard plastic processing techniques. The material for injection-molding consists of OZ-1330, 2,N,N-dihexylamino-7-dicyanomethylidenenyl-3,4,5,6,10- pentahydronaphthalene, (2,4,7-trinitro-9-

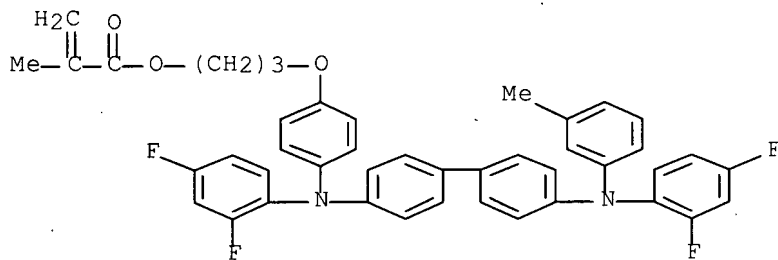


IT 433716-29-1 433716-30-4

RN 433716-29-1 HCAPLUS

CC(=C)C(=O)OCCCOc1ccc(N(c2ccc(F)cc2)c3ccc(cc3)-c4ccc(cc4)-c5ccc(cc5)N(c6ccc(F)cc6)c7ccc(C)cc7)cc1

CN 2-Propenoic acid, 2-methyl-, 3-[4-[(2,4-difluorophenyl)[4'-[(2,4-difluorophenyl)(3-methylphenyl)amino][1,1'-biphenyl]-4-yl]amino]phenoxy]propyl ester (9CI) (CA INDEX NAME)



Section cross-reference(s): 35, 73

IT Crosslinking

IT Electroluminescent devices

## Photoimaging materials

## Photolithography

(photocrosslinkable hole transport polymers sensitized by

two-photon absorption for holog. fabrication of **light-emitting** diodes)

- IT Four wave mixing  
Holographic recording materials  
Photorefractive materials  
(photorefractive polymers and composites sensitized by two-photon absorption for holog. imaging and **displays**)
- IT Two-photon absorption  
(photorefractive polymers sensitized by two-photon absorption for holog. imaging and **displays**)
- IT 50926-11-9, ITO  
RL: DEV (Device component use); USES (Uses)  
(anode; photocrosslinkable hole transport polymers sensitized by two-photon absorption for holog. fabrication of **light-emitting** diodes)
- IT 37271-44-6  
RL: DEV (Device component use); USES (Uses)  
(cathode; photocrosslinkable hole transport polymers sensitized by two-photon absorption for holog. fabrication of **light-emitting** diodes)
- IT 433716-27-9 433716-28-0 433716-29-1 433716-30-4  
RL: NUU (Other use, unclassified); USES (Uses)  
(monomer; photoimaging composition using photocrosslinkable hole transport polymers for fabrication of **light-emitting** diodes)
- IT 433716-31-5  
RL: TEM (Technical or engineered material use); USES (Uses)  
(photocrosslinkable hole transport polymers sensitized by two-photon absorption for fabrication of **light-emitting** diodes)
- IT 2085-33-8, AlQ3  
RL: DEV (Device component use); USES (Uses)  
(photocrosslinkable hole transport polymers sensitized by two-photon absorption for holog. fabrication of **light-emitting** diodes)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L49 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:603530 HCAPLUS Full-text

DOCUMENT NUMBER: 135:187795

TITLE: New amine compound for organic **electroluminescent device** showing longer luminescent lifetime and excellent durability

INVENTOR(S): Shimamura, Takehiko; Nakatsuka, Masakatsu; Ishida, Tsutomu

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 75 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001226331	A	20010821	JP 2000-34477	

200002

14

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PRIORITY APPLN. INFO.:

JP 2000-34477

200002

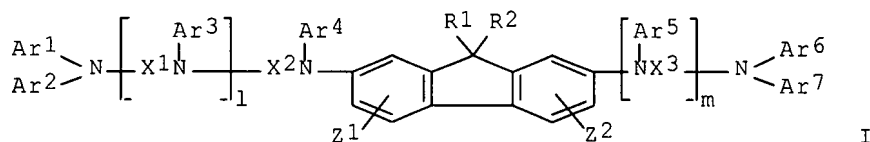
14

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OTHER SOURCE(S):

MARPAT 135:187795

GI



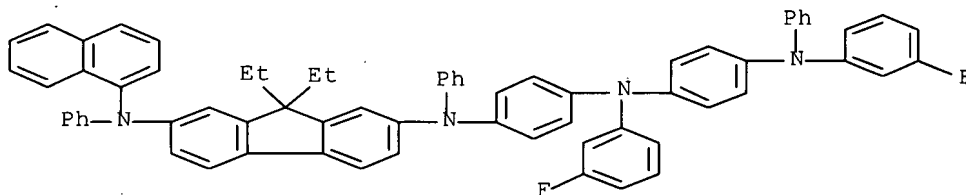
AB The new amine compound is represented by a general formula I (Ar1-7 = aryl; R1, R2 = H, alkyl, aryl, aralkyl; Z1, Z2 = H, halo, alkyl, alkoxy, aryl; X1-3 = arylene; 1, m = 0, 1) and synthesized. The amine compound is suitable as a pos. hole injection transport material in an organic **electroluminescent display device**.

IT 354987-34-1 354987-57-8 354987-73-8

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(amine compound for organic **electroluminescent device** showing longer luminescent lifetime and excellent durability)

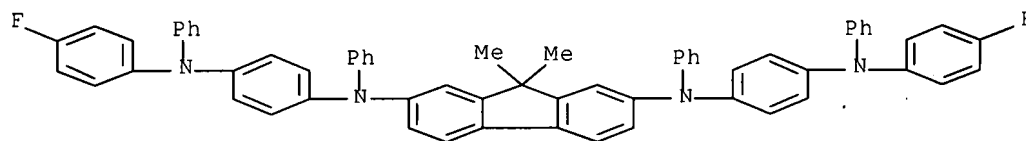
RN 354987-34-1 HCAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-diethyl-N-[4-[(3-fluorophenyl)[4-[(3-fluorophenyl)phenylamino]phenyl]amino]phenyl]-N'-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



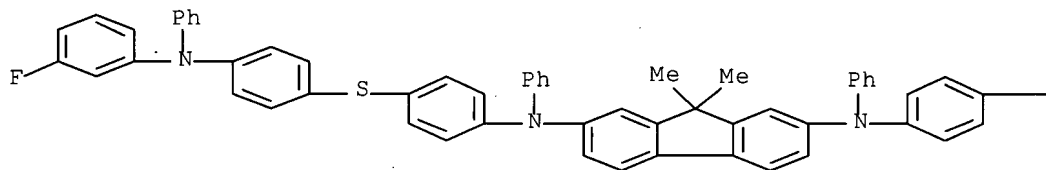
RN 354987-57-8 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N,N'-bis[4-[(4-fluorophenyl)phenylamino]phenyl]-9,9-dimethyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)

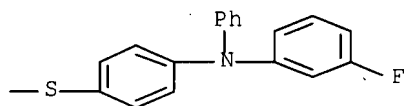


RN 354987-73-8 HCAPLUS  
 CN 9H-Fluorene-2,7-diamine, N,N'-bis[4-[[4-[(3-fluorophenyl)phenylamino]phenyl]thio]phenyl]-9,9-dimethyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



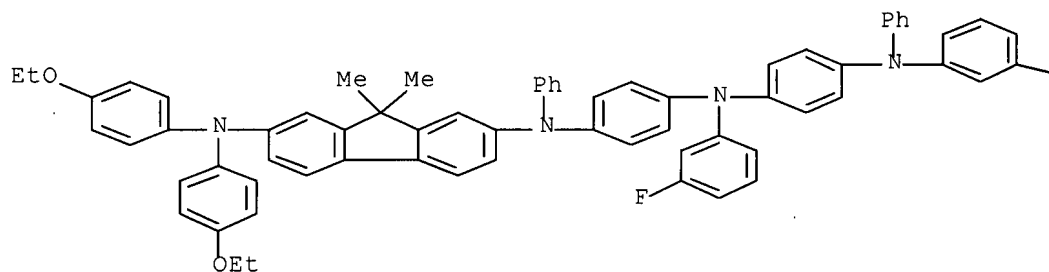
PAGE 1-B



IT 354987-36-3P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (amine compound for organic **electroluminescent device** showing longer luminescent lifetime and excellent durability)

RN 354987-36-3 HCAPLUS  
 CN 9H-Fluorene-2,7-diamine, N,N'-bis(4-ethoxyphenyl)-N'-[4-[(3-fluorophenyl)[4-[(3-fluorophenyl)phenylamino]phenyl]amino]phenyl]-9,9-dimethyl-N'-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

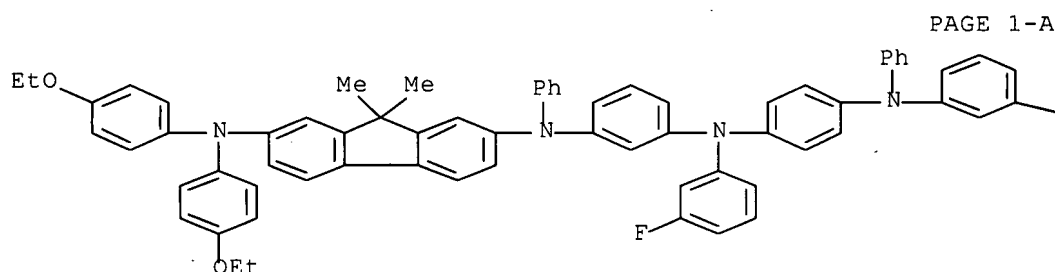


PAGE 1-B

— F

RL: RCT (Reactant); RACT (Reactant or reagent)  
(synthesis of amine compound for organic **electroluminescent device** showing longer luminescent lifetime and excellent durability)

CN 9H-Fluorene-2,7-diamine, N,N-bis(4-ethoxyphenyl)-N'-[3-[(3-fluorophenyl)[4-[(3-fluorophenyl)phenylamino]phenyl]amino]phenyl]-9,9-dimethyl-N'-phenyl- (9CI) (CA INDEX NAME)



PAGE 1-B

ICS C07C217-94; C07D209-86; C07D213-74; C07D265-38; C07D279-26;  
C07D333-36; C09K011-06; H05B033-14; H05B033-22

ST amine compd synthesis pos hole injection transport material;  
**electroluminescent display device** amine  
compd charge transport material

(amine compound for organic **electroluminescent device** showing longer luminescent lifetime and excellent durability)

IT	354987-33-0	<b>354987-34-1</b>	354987-35-2	354987-37-4	
	354987-38-5	354987-40-9	354987-41-0	354987-44-3	354987-45-4
	354987-48-7	354987-49-8	354987-51-2	354987-53-4	354987-54-5
	354987-56-7	<b>354987-57-8</b>	354987-59-0	354987-60-3	
	354987-61-4	354987-63-6	354987-64-7	354987-65-8	354987-66-9
	354987-69-2	354987-70-5	354987-72-7	<b>354987-73-8</b>	

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(amine compound for organic **electroluminescent device** showing longer luminescent lifetime and excellent durability)

IT	354987-31-8P	354987-32-9P	<b>354987-36-3P</b>	354987-39-6P
	354987-42-1P	354987-43-2P	354987-46-5P	354987-47-6P
	354987-50-1P	354987-52-3P	354987-55-6P	354987-58-9P
	354987-62-5P	354987-67-0P	354987-71-6P	

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic

preparation); PREP (Preparation); USES (Uses)  
 (amine compound for organic **electroluminescent device** showing longer luminescent lifetime and excellent durability)

IT 74-31-7 106-37-6, 1,4-Dibromobenzene 3001-15-8,  
 4,4'-Diiodobiphenyl 19606-98-5 138417-49-9 144981-86-2,  
 2,7-Diiodo-9,9-dimethyl-9H-fluorene 195443-34-6 280113-41-9  
 302579-18-6 308144-59-4 308144-63-0, 2-(N,N-Diphenylamino)-9,9-  
 dimethyl-7-iodo-9H-fluorene 329180-34-9 354987-74-9  
 354987-75-0 **354987-76-1** 354987-77-2 354987-78-3  
 354987-79-4 354987-80-7 354987-81-8 354987-82-9 354987-83-0  
 354987-84-1 354987-85-2 354987-86-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (synthesis of amine compound for organic **electroluminescent device** showing longer luminescent lifetime and excellent durability)

L49 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:111658 HCAPLUS Full-text

DOCUMENT NUMBER: 130:202697

TITLE: Organic **electroluminescent device** used as planar light source in optical **displays**

INVENTOR(S): Okutsu, Akira; Tamano, Michiko; Onikubo, Shunichi; Enokida, Toshio

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

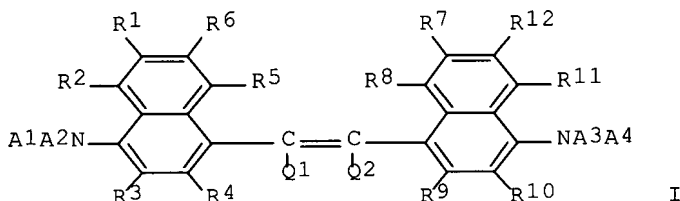
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11040359	A	19990212	JP 1997-195294	19970722
			<--	
JP 3890686	B2	20070307		
PRIORITY APPLN. INFO.:			JP 1997-195294	19970722
			<--	

OTHER SOURCE(S): MARPAT 130:202697

GI



AB An organic **electroluminescent device** with high intensity and long operation life, comprises a **light emitting** layer containing a substance represented by I [A1-4 = alkyl, monocyclic, condensed polycyclic, etc.; Q1-2 = H, CN, alkyl, etc.; R1-12 = H, halo, CN, NO<sub>2</sub>, etc.] and an electron injection/transporting layer containing a substance represented by 1X2XLGe [X1-2 = hydroxyquinoline, and hydroxybenzoquinoline derivs.; L = halo, alkyl, monocyclic, etc.].

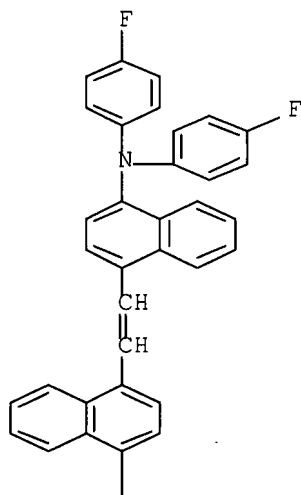
IT 220720-36-5

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** used as  
planar light source in optical **displays**)

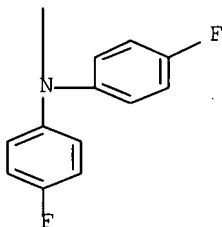
RN 220720-36-5 HCAPLUS

CN 1-Naphthalenamine, 4,4'-(1,2-ethenediyl)bis[N,N-bis(4-fluorophenyl)-  
(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)

ST org **electroluminescent device**

IT **Electroluminescent devices**

(organic **electroluminescent device** used as

planar light source in optical displays)

IT 2085-33-8, Al 8q 15082-28-7 62896-28-0 65181-78-4, TPD  
 123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl  
 124729-98-2, 4,4',4''-Tris[N-(3-methylphenyl)-N-phenylamino]triphenylamine 151026-65-2, N,N'-(4-Methylphenyl)-N,N'-(4-n-butylphenyl)-phenanthrene-9,10-diamine 177799-11-0  
 177799-15-4 188049-36-7 194794-43-9 219638-64-9 220720-15-0  
 220720-16-1 220720-17-2 220720-18-3 220720-19-4 220720-20-7  
 220720-21-8 220720-22-9 220720-23-0 220720-24-1 220720-25-2  
 220720-26-3 220720-27-4 220720-28-5 220720-29-6 220720-31-0  
 220720-33-2 220720-34-3 220720-35-4 220720-36-5  
 220720-37-6 220720-38-7 220720-39-8

RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent device used as  
 planar light source in optical displays)

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L55 ANSWER 1 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1077990 HCAPLUS Full-text

DOCUMENT NUMBER: 143:376176

TITLE: Organic element for electroluminescent devices employing a light-emitting material based on a boron complex with a tertiary amine substituent

INVENTOR(S): Owczarczyk, Zbyslaw R.; Brown, Christopher T.; Jarikov, Viktor V.

PATENT ASSIGNEE(S): Eastman Kodak Company, USA

SOURCE: U.S. Pat. Appl. Publ., 25 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005221120	A1	20051006	US 2004-813833	20040331
			<--	
WO 2005100507	A1	20051027	WO 2005-US9027	20050317
			<--	

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1730250 A1 20061213 EP 2005-725867



200503

17

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R: DE, FR, GB

PRIORITY APPLN. INFO.:

US 2004-813833

A

200403

31

&lt;--

WO 2005-US9027

W

200503

17

OTHER SOURCE(S): MARPAT 143:376176

AB An **electroluminescent device** comprises a **light-emitting** layer containing a host and a light-emitting material where the light-emitting material comprises a boron complex containing boron complexed by two ring nitrogens of a deprotonated bis(aromatic)amine or bis(aromatic)methene ligand where the boron complex contains a tertiary amine substituent group. The invention provides a material for a light-emitting layer of an **EL device** that exhibits improved luminance efficiency.

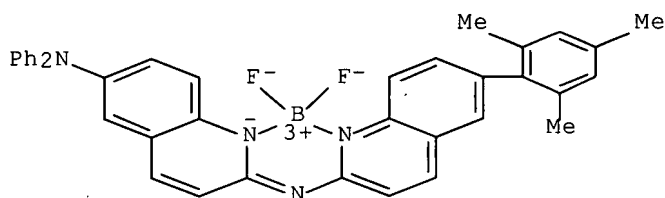
IT 866122-68-1P

RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic element for **electroluminescent devices** employing **light-emitting** material based on boron complex with tertiary amine substituent)

RN 866122-68-1 HCAPLUS

CN Boron, [N-[6-(diphenylamino)-2(1H)-quinolinylydene-κN]-6-(2,4,6-trimethylphenyl)-2-quinolinaminato-κN1]difluoro-, (T-4)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

INCL 428690000; 428917000; 313504000; 313506000; 313112000; 257098000; 568001000; 546013000; 548110000; 548405000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 28, 74, 76

ST org **electroluminescent device** boron complex tertiary amine OLED

IT **Electroluminescent devices**

(displays; organic element for **electroluminescent devices** employing **light-emitting**

material based on boron complex with tertiary amine substituent)

IT **Luminescent screens**

**Luminescent substances**

(electroluminescent; organic element for **electroluminescent devices** employing

light-emitting material based on boron complex  
with tertiary amine substituent)

IT **Electroluminescent devices**

(organic element for **electroluminescent devices**  
employing **light-emitting** material based on  
boron complex with tertiary amine substituent)

IT 123847-85-8, NPB

RL: DEV (Device component use); USES (Uses)  
(hole-transporting layer; organic element for  
**electroluminescent devices** employing  
**light-emitting** material based on boron complex  
with tertiary amine substituent)

IT 2085-33-8, Aluminum tris(8-hydroxyquinolinato)

RL: DEV (Device component use); USES (Uses)  
(host and electron-transporting layer; organic element for  
**electroluminescent devices** employing  
**light-emitting** material based on boron complex  
with tertiary amine substituent)

IT 120-12-7D, Anthracene, derivs.

RL: DEV (Device component use); USES (Uses)  
(host; organic element for **electroluminescent**  
**devices** employing **light-emitting**  
material based on boron complex with tertiary amine substituent)

IT 866122-68-1P

RL: DEV (Device component use); MOA (Modifier or additive use); PRP  
(Properties); SPN (Synthetic preparation); PREP (Preparation); USES  
(Uses)

(organic element for **electroluminescent devices**  
employing **light-emitting** material based on  
boron complex with tertiary amine substituent)

IT 122-39-4, Diphenylamine, reactions 1810-66-8 7637-07-2, Boron  
fluoride (BF<sub>3</sub>), reactions 10025-87-3, Phosphorus chloride oxide  
(PCl<sub>3</sub>) 866022-57-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic element for **electroluminescent devices**  
employing **light-emitting** material based on  
boron complex with tertiary amine substituent prepared using)

IT 866022-56-2P 866022-58-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)  
(organic element for **electroluminescent devices**  
employing **light-emitting** material based on  
boron complex with tertiary amine substituent prepared using)

L55 ANSWER 2 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1023558 HCAPLUS Full-text

DOCUMENT NUMBER: 143:315175

TITLE: Quinonoid-containing materials for organic  
**electroluminescent devices** and  
the **devices**

INVENTOR(S): Onikubo, Shunichi; Suda, Yasumasa; Toba,  
Yasumasa

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 44 pp.

CODEN: JKXXAF

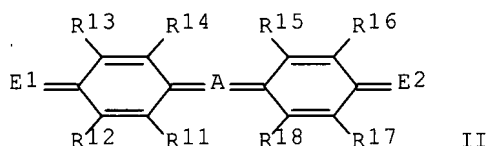
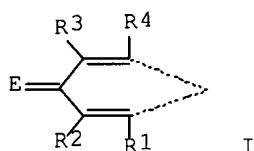
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005255889	A	20050922	JP 2004-70729	200403 12
			<--	
PRIORITY APPLN. INFO.:			JP 2004-70729	200403 12
			<--	
OTHER SOURCE(S):		MARPAT 143:315175		
GI				



AB The title materials contain (A) electron receptor compds., which includes  $\geq 2$  partial structures I (E = partial structure forming electron-withdrawing group including the double bond; R1-4 = H, halo, cyano, nitro, (un)substituted alkyl, (un)substituted alkoxy, (un)substituted aryloxy, (un)substituted alkylthio, (un)substituted arylthio, (un)substituted amino, (un)substituted acyl, (un)substituted aryl, (un)substituted heterocycle, neighboring Rs may form rings among the substituents) that are connected by  $\pi$ -conjugation via the dotted lines, and (B) phosphorescent compds. Preferable Markush structure for A, i.e. II (E1, E2 = selected from groups same as E; A = direct bond, quinonoid bond, bonding groups forming  $\pi$  conjugate; R11-18 = H, halo, cyano, nitro, (un)substituted alkyl, (un)substituted alkoxy, (un)substituted aryloxy, (un)substituted alkylthio, (un)substituted arylthio, (un)substituted amino, (un)substituted acyl, (un)substituted carbon ring, (un)substituted heterocycle, neighboring Rs may form rings among the substituents), is given. Preferably, B is Ir or Pt complexes having organic ligands. Organic **electroluminescent devices** comprising  $\geq 1$  **light-emitting** layers including the said materials are also claimed. Devices, suitable for planar light sources and **displays**, showing high luminance, emission efficiency, and stability in repeated use are obtained.

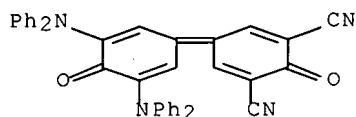
IT **864863-01-4**

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(hole transportation layer; quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the devices)

RN 864863-01-4 HCAPLUS

CN 3,6-Cyclohexadiene-1,3-dicarbonitrile, 5-[3,5-bis(diphenylamino)-4-oxo-2,5-cyclohexadien-1-ylidene]-2-oxo- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
ICS C07C049-613; H05B033-14

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

ST org **electroluminescent device** conjugated bond  
receptor phosphorescent; quinonoid organoiridium  
**electroluminescent device**

IT Luminescent substances  
(electroluminescent; quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the **devices**)

IT **Electroluminescent devices**  
Phosphorescent substances  
(quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the **devices**)

IT 2455-14-3P  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(electroluminescent materials containing; quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the **devices**)

IT 434-85-5 3550-01-4 5722-42-9 14187-14-5 23467-27-8  
31248-39-2 58328-31-7 59869-79-3 159335-50-9 159335-53-2  
159335-57-6 176308-68-2 192198-85-9 257881-73-5 376367-93-0  
693794-98-8 800394-58-5 800395-01-1 848902-76-1 864862-87-3  
864862-88-4 864862-89-5 864862-91-9 864862-92-0 864862-93-1  
864862-94-2 864862-95-3 864863-74-1  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electroluminescent materials containing; quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the **devices**)

IT 905-62-4, 2,5-Bis(1-naphthyl)-1,3,4-oxadiazole 2085-33-8,  
Tris(8-hydroxyquinolinato)aluminum 221554-51-4 395644-78-7  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electron injection layer; quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the **devices**)

IT 1662-01-7, Bathophenanthroline 4733-39-5, Bathocuproin  
146162-49-4 146162-54-1 150405-69-9, 3-(4-Biphenyl)-4-phenyl-5-(4-tert-butylphenyl)-1,2,4-triazole 848902-77-2 848902-78-3  
864862-96-4 864862-97-5 864862-98-6 864862-99-7 864863-00-3  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(hole blocking layer; quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the **devices**)

IT 147-14-8, Copper phthalocyanine 808-57-1, 2,3,6,7,10,11-Hexamethoxytriphenylene 65181-78-4 123847-85-8 182507-83-1  
185690-39-5, 4,4',4''-Tris[N-(1-naphthyl)-N-phenylamino]triphenylamine  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(hole injection layer; quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the **devices**)

IT 864863-01-4

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (hole transportation layer; quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the **devices**)

IT 128-39-2, 2,6-Di-tert-butyl phenol

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (quinonoid-containing materials and phosphorescent materials for organic **electroluminescent devices** and the **devices**)

L55 ANSWER 3 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:281206 HCAPLUS Full-text

DOCUMENT NUMBER: 142:344877

TITLE: Organic **electroluminescent (EL)**  
**) devices** with high brightness,  
 emission efficiency, and heat resistance

INVENTOR(S): Maki, Shinichiro; Tanaka, Hiroaki; Kaneko,  
 Tetsuya; Onikubo, Shunichi

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 29 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005085599	A	20050331	JP 2003-316326	20030909

PRIORITY APPLN. INFO.: <--  
 JP 2003-316326

200309  
 09

OTHER SOURCE(S): MARPAT 142:344877

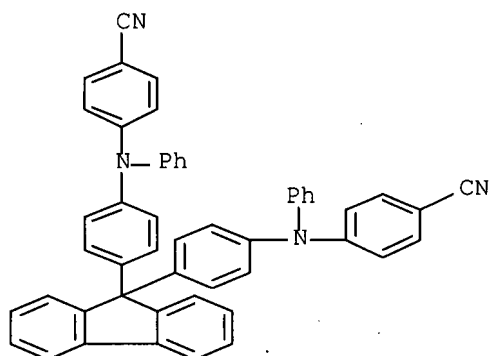
AB The devices, useful for **displays** in automobiles, have phosphor-containing light-emitting layers (A) or plural organic thin film layers including A, wherein the organic layers contain (un)substituted 9-R1-9-R2-fluorene [R1, R2 = (un)substituted Ph] in A or in hole-injecting and/or hole-transporting layers.

IT 848679-60-7

RL: TEM (Technical or engineered material use); USES (Uses)  
 (hole-injecting or hole-transporting layer; organic **EL**  
**devices** containing diphenylfluorene derivs. with high  
 brightness, emission efficiency, and heat resistance)

RN 848679-60-7 HCAPLUS

CN Benzonitrile, 4,4'-[9H-fluoren-9-ylidenebis[4,1-  
 phenylene(phenylimino)]]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-22  
ICS C09K011-06; H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent device** phenylfluorene hole transporter durability; heat resistance EL hole injection fluorene

IT **Electroluminescent devices**  
(organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 147-14-8, Copper phthalocyanine 123847-85-8  
RL: TEM (Technical or engineered material use); USES (Uses)  
(hole-injecting layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 159526-57-5 166444-94-6 166444-95-7 166444-97-9 166444-98-0  
174141-92-5 174141-94-7 213968-66-2 268730-91-2  
**848679-60-7** 848679-61-8 848679-69-6 848679-70-9  
848679-71-0  
RL: TEM (Technical or engineered material use); USES (Uses)  
(hole-injecting or hole-transporting layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 53812-81-0 848679-58-3 848679-59-4 848679-62-9 848679-63-0  
848679-64-1 848679-65-2 848679-66-3 848679-67-4 848679-68-5  
RL: TEM (Technical or engineered material use); USES (Uses)  
(hole-injecting, hole-transporting, or **light-emitting** layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 58328-31-7 848679-72-1 848679-73-2 848679-74-3 848679-75-4  
RL: TEM (Technical or engineered material use); USES (Uses)  
(host, **light-emitting** layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

IT 94928-86-6  
RL: TEM (Technical or engineered material use); USES (Uses)  
(phosphor, **light-emitting** layer; organic **EL devices** containing diphenylfluorene derivs. with high brightness, emission efficiency, and heat resistance)

TITLE: New Carbazole-Oxadiazole Dyads for  
**Electroluminescent Devices:**  
Influence of Acceptor Substituents on  
Luminescent and Thermal Properties  
AUTHOR(S): Thomas, K. R. Justin; Lin, Jiann T.; Tao,  
Yu-Tai; Chuen, Chang-Hao  
CORPORATE SOURCE: Institute of Chemistry, Academia Sinica, Taipei,  
Taiwan  
SOURCE: Chemistry of Materials (2004), 16(25),  
5437-5444  
CODEN: CMATEX; ISSN: 0897-4756  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

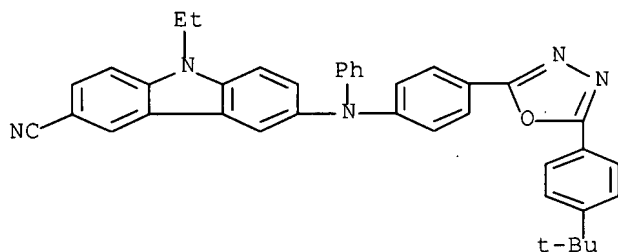
AB Carbazole-oxadiazole dyads linked by amino functionality is prepared in good yields by C-N coupling reactions catalyzed by Pd(dba)<sub>2</sub>/P(CMe<sub>3</sub>)<sub>3</sub> under basic conditions in toluene. The compds. possess addnl. electron-withdrawing groups such as CF<sub>3</sub> and CN either on oxadiazole or on carbazole nucleus. The placement of CF<sub>3</sub> on the oxadiazole end enhances the electron deficiency of the oxadiazole unit, while the CN substituent at the carbazole nucleus decreases the donor strength of carbazole. This results in slight alterations in the oxidation potentials and thermal properties of the resulting dyads. This also leads to a pathway for fine-tuning the energy levels and amorphous morphol. in these dyads. While CN groups alter by .apprx.0.2 eV the energy levels, a counterproductive T<sub>g</sub> reduction/thermal instability is observed for the CF<sub>3</sub> derivs. All of these derivs. **display** solvent-dependent emission profiles with the solid-state emission occurring in the cyan region. **Electroluminescent devices** fabricated using these compds. as hole-transporting layer and Alq<sub>3</sub> or TPBI as the electron-transporting layer emit cyan color. The emission in most cases arises from the HTL layer. However, slight distortions in shape and peak position of the EL spectra were noticed, which were attributed to either the mixing of emissions from HTL and ETL layer or the complex formation between the HTL and ETL materials. Energetics governing the confinement of excitons in the emissive layer is critically analyzed.

IT 821807-58-3P 821807-59-4P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(carbazole-oxadiazole dyads for LEDs with acceptor substituent effects on luminescent and thermal properties)

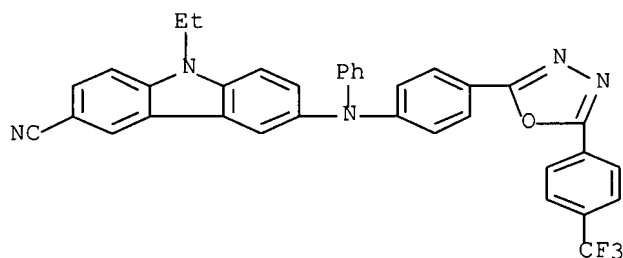
RN 821807-58-3 HCAPLUS

CN 9H-Carbazole-3-carbonitrile, 6-[[4-[5-[4-(1,1-dimethylethyl)phenyl]-1,3,4-oxadiazol-2-yl]phenyl]phenylamino]-9-ethyl- (9CI) (CA INDEX NAME)



RN 821807-59-4 HCAPLUS

CN 9H-Carbazole-3-carbonitrile, 9-ethyl-6-[phenyl[4-[5-[4-(trifluoromethyl)phenyl]-1,3,4-oxadiazol-2-yl]phenyl]amino]- (9CI) (CA INDEX NAME)



CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 28, 69, 72, 76, 77

IT **Electroluminescent devices**  
 Glass transition temperature  
 Inductive effect  
 Luminescence  
 Oxidation potential  
 (carbazole-oxadiazole dyads for LEDs with acceptor substituent effects on luminescent and thermal properties)

IT 821807-55-0P 821807-56-1P 821807-57-2P **821807-58-3P**  
**821807-59-4P**  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (carbazole-oxadiazole dyads for LEDs with acceptor substituent effects on luminescent and thermal properties)

REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L55 ANSWER 5 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:842711 HCAPLUS Full-text

DOCUMENT NUMBER: 141:340137

TITLE: White-emitting organic **electroluminescent device** with high emission efficiency and long service life and its **display** and illumination

INVENTOR(S): Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.  
 CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004288380	A	20041014	JP 2003-75511	20030319

PRIORITY APPLN. INFO.:

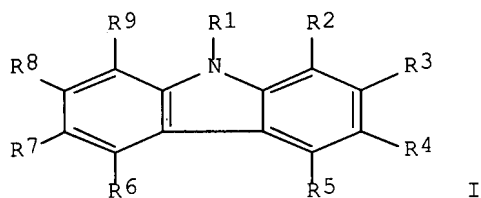
<-- JP 2003-75511

200303



&lt;--

OTHER SOURCE(S): MARPAT 141:340137  
GI



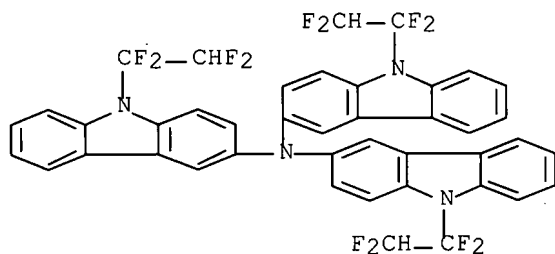
AB The organic **EL device** contains carbazol derivs. represented by the general formula I (R1 = H, substituent, F-containing alkyl; when R1 = H or substituent,  $\geq 1$  of R2-R9 = F or F-containing alkyl and other R2-R9 = H or substituent; when R1 = F-containing alkyl, R2-R9 = H or substituent). The organic **EL device** will contain I and phosphorescent dopants in the light-emitting layer.

IT 773156-57-3

RL: DEV (Device component use); USES (Uses)  
(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and illumination)

RN 773156-57-3 HCAPLUS

CN 9H-Carbazol-3-amine, 9-(1,1,2,2-tetrafluoroethyl)-N,N-bis[9-(1,1,2,2-tetrafluoroethyl)-9H-carbazol-3-yl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST carbazol deriv host org **electroluminescent device**  
; phosphorescent dopant org **electroluminescent device**; org **electroluminescent display** carbazol deriv host; **illumination** org **electroluminescent device** carbazol deriv

IT **Electroluminescent devices**

(**displays**; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and illumination)

IT Luminescent **screens**

(electroluminescent; white-emitting organic **EL**

**device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and illumination)

IT Light  
(white, fluorescent; white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and illumination)

IT **Electroluminescent devices**  
Phosphors  
(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and illumination)

IT 2085-33-8, Alq3 4733-39-5 58328-31-7 94928-86-6 123847-85-8  
344796-22-1 376367-93-0 405171-87-1 602331-44-2 773156-50-6  
773156-51-7 773156-52-8 773156-53-9 773156-54-0 773156-55-1  
773156-56-2 **773156-57-3** 773156-58-4 773156-59-5  
773156-60-8 773156-61-9 773156-62-0 773156-63-1 773156-64-2

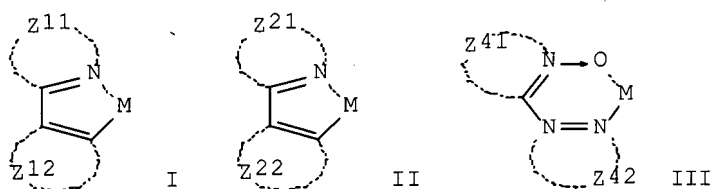
RL: DEV (Device component use); USES (Uses)  
(white-emitting organic **EL device** containing carbazol derivs. as hosts for phosphorescent dopants for **display** and illumination)

L55 ANSWER 6 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2004:739385 HCAPLUS Full-text  
DOCUMENT NUMBER: 141:268179  
TITLE: Long-life white-emitting organic **electroluminescent devices, displays, illumination apparatus, and electric appliances therewith**  
INVENTOR(S): Fukuda, Mitsuhiro; Genda, Kazuo  
PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 577 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004253298	A	20040909	JP 2003-43860	20030221

PRIORITY APPLN. INFO.: <-- JP 2003-43860 20030221

OTHER SOURCE(S): MARPAT 141:268179  
GI



AB The devices have, in their constituent layers (e.g., emitting layers, hole- or electron-transporting layers), (i) compds. represented by  $X1R1C:CR2X2$  [ $X1, X2$  = aryl, heterocycle;  $R1, R2$  = aryl, heterocyclic hydrocarbyl, cycloalkoxy ( $R1 = R2$  = aryl)],  $R11R12R13R14R15P$  ( $R11-R15$  = monovalent substituent),  $Ar2Ar1C6H4(m-Ar1Ar2)$  [ $Ar1$  = bivalent aromatic hydrocarbylene;  $Ar2$  = (substituted) Ph; H atom on the benzene ring may be substituted with (cyclo)alkyl, alkoxy, or halo],  $Z(ArQ)n$  [ $Q$  = (substituted) o-(2-pyridyl)phenyl;  $Z$  = n-valent bridging group, single bond;  $Ar$  = bivalent arylene;  $n = 2-8$ ], etc., (ii) fluorescent compds. with mol. weight 500-2000 and atomic ratio  $F/(F + H)$  0-0.9 and having fluorescent peak at  $\leq 415$  nm, (iii) polysilanes  $(R21R22Si)_n$  [ $R21, R22$  = alkyl(oxy), aromatic group, aryloxy;  $n1 \geq 3$ ] or  $[R31(Ar31NR32R33)Si]_n$  [ $R31$  = alkyl(oxy), aromatic group, aryloxy;  $R32, R33$  = alkyl, aromatic group;  $Ar31$  = arylene;  $n2 \geq 3$ ], and/or (iv) fluorescent compds. satisfying atomic ratio  $N/C$  0-0.05. The devices, having phosphorescent dopants I ( $Z11$  = aromatic azacycle;  $Z12$  = nonarom. ring, 5-membered aromatic ring, azulene;  $M$  = metal), II ( $Z21, Z22$  = aromatic azacycle;  $M$  = metal), or III ( $Z41$  = azacycle;  $Z42$  = ring;  $M$  = metal) in emitting layers, are also claimed. The devices exhibit high luminescent efficiency and substantially white emission, and are suited for light source uses, especially of LCD.

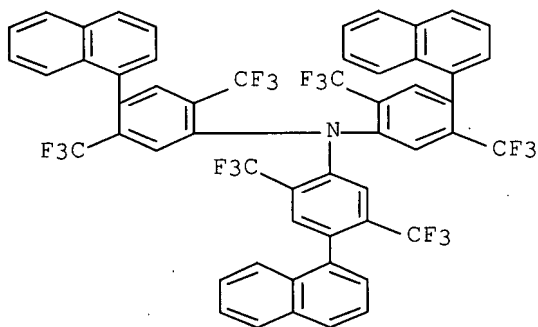
IT 655240-48-5

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

RN 655240-48-5 HCAPLUS

CN Benzenamine, 4-(1-naphthalenyl)-N,N-bis[4-(1-naphthalenyl)-2,5-bis(trifluoromethyl)phenyl]-2,5-bis(trifluoromethyl)phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; G02F001-1335; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 28, 29, 38, 74

IT Liquid crystal displays

(light sources for; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT **Electroluminescent devices**

(white-emitting, electrophosphorescent; long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

IT 71-43-2, Benzene, uses 159-68-2, 9,9'-Spirobi[9H-9-silafluorene]  
 346-02-1 752-28-3 1423-70-7 17742-49-3 18822-13-4  
 20156-53-0 32314-41-3 33861-11-9 35088-77-8 38186-32-2  
 54765-15-0 65181-79-5 122107-04-4 133942-93-5 139376-06-0  
 142289-08-5 203070-80-8 213621-16-0 219917-71-2 288581-17-9  
 300823-56-7 300823-57-8 301300-11-8 332350-53-5 405171-49-5  
 405171-87-1 405172-39-6 453590-51-7 478262-73-6 478262-74-7  
 478262-76-9 478262-77-0 478262-78-1 478262-79-2 478370-42-2  
 492446-94-3 492446-97-6 497097-34-4 497097-36-6 511270-11-4  
 522630-08-6 522630-12-2 522630-19-9 522630-30-4 522630-34-8  
 522630-36-0 557787-50-5 557787-51-6 557787-53-8 557787-54-9  
 557787-56-1 557787-57-2 557787-58-3 557787-59-4 564483-87-0  
 567625-72-3 567625-73-4 567625-75-6 567625-78-9 567625-80-3  
 569674-85-7 569674-87-9 569674-89-1 569674-90-4 569674-92-6  
 569674-94-8 569674-95-9 569674-96-0 583040-29-3 583040-30-6  
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 608145-80-8 608145-85-3 620630-42-4 620630-43-5 620630-45-7  
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 620630-63-9 620630-64-0 620630-65-1 620630-66-2 620630-67-3  
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 643758-09-2 643758-10-5 643758-15-0 644973-61-5 644973-63-7  
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 663219-25-8 663219-28-1 663219-29-2 663219-39-4 666839-78-7  
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 688315-82-4 688315-83-5 688315-84-6 688315-86-8 688315-87-9  
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 694534-44-6 694534-45-7 694534-46-8 694534-47-9 705941-97-5  
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 722547-89-9 754231-79-3 754231-80-6 754231-82-8 754231-83-9  
 754231-84-0 754231-87-3 754231-88-4 754231-89-5 754231-90-8  
 754231-91-9 754231-92-0 754231-94-2

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

L55 ANSWER 7 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:512741 HCAPLUS Full-text

DOCUMENT NUMBER: 141:79110

TITLE: Organic **electroluminescent devices/displays**

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.

DOCUMENT TYPE: CODEN: JKXXAF  
 LANGUAGE: Patent  
 FAMILY ACC. NUM. COUNT: Japanese  
 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004178896	A	20040624	JP 2002-342194	20021126

PRIORITY APPLN. INFO.:

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 JP 2002-342194  
 20021126  
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OTHER SOURCE(S): MARPAT 141:79110

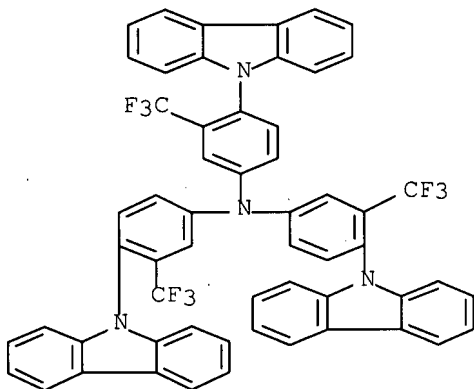
AB The devices/**displays** comprise, in organic layers, triarylamines NAr<sub>1</sub>Ar<sub>2</sub>Ar<sub>3</sub> (Ar<sub>1</sub>-3 = substituted ph or 4-biphenyl having carbazoyl substituent) as hosts, and phosphorescent substances capable of emitting from the triplet-state exciton as dopants. Preferably, the dopants are complexes of Group VIIIB metals. The devices/**displays** show high luminance, quantum efficiency, and long half-life.

IT 710306-24-4 710306-33-5 710320-40-4

RL: TEM (Technical or engineered material use); USES (Uses)  
 (host; organic **electroluminescent device**/  
**displays** containing triarylamine hosts and phosphorescent  
 dopants)

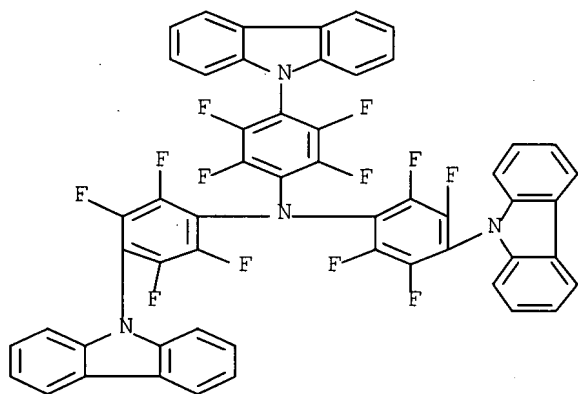
RN 710306-24-4 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-3-(trifluoromethyl)phenyl]-3-(trifluoromethyl)- (9CI) (CA INDEX NAME)



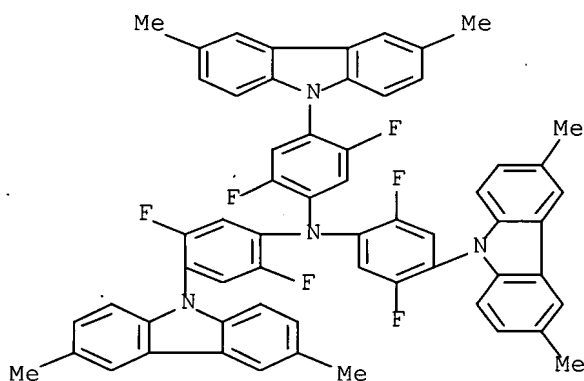
RN 710306-33-5 HCAPLUS

CN Benzenamine, 4-(9H-carbazol-9-yl)-N,N-bis[4-(9H-carbazol-9-yl)-2,3,5,6-tetrafluorophenyl]-2,3,5,6-tetrafluoro- (9CI) (CA INDEX NAME)



RN 710320-40-4 HCAPLUS

CN Benzenamine, 4-(3,6-dimethyl-9H-carbazol-9-yl)-N,N-bis[4-(3,6-dimethyl-9H-carbazol-9-yl)-2,5-difluorophenyl]-2,5-difluoro- (9CI)  
(CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-12

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST org **electroluminescent device** triarylamine host  
phosphorescent dopant; **display** org electroluminescent  
triarylamine host phosphorescent dopant; Group IIIB metal complex  
dopant org **electroluminescent device**

IT **Electroluminescent devices**

(displays, organic; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)

IT **Luminescent screens**

(electroluminescent, organic; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)

IT **Luminescent substances**

(electroluminescent; organic **electroluminescent device/displays** containing triarylamine hosts and phosphorescent dopants)

IT **Electroluminescent devices**

(organic; organic **electroluminescent device/**  
**displays** containing triarylamine hosts and phosphorescent  
dopants)

IT 655240-58-7 710306-22-2 **710306-24-4** 710306-25-5  
710306-26-6 710306-27-7 710306-28-8 710306-29-9 710306-30-2  
710306-31-3 **710306-33-5** 710306-34-6 710306-35-7  
710306-36-8 710306-37-9 **710320-40-4**

RL: TEM (Technical or engineered material use); USES (Uses)  
(host; organic **electroluminescent device/**  
**displays** containing triarylamine hosts and phosphorescent  
dopants)

IT 94928-86-6 344796-22-1 376367-93-0

RL: TEM (Technical or engineered material use); USES (Uses)  
(phosphorescent dopant; organic **electroluminescent**  
**device/displays** containing triarylamine hosts and  
phosphorescent dopants)

L55 ANSWER 8 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:330972 HCAPLUS Full-text

DOCUMENT NUMBER: 140:347236

TITLE: Organic **electroluminescent**  
**device** and liquid crystal  
**display**

INVENTOR(S): Noguchi, Takashi

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004127563	A	20040422	JP 2002-286417	200209 30

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PRIORITY APPLN. INFO.: JP 2002-286417

200209  
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AB The invention refers to an organic **electroluminescent device** having maximum  
luminescence and min. reflectance in primary colors, and a liquid crystal **display**  
which uses such a device as a supplementary light source.

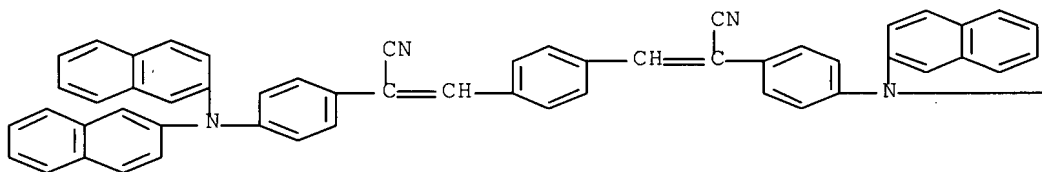
IT **681140-81-8**

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent device** and liquid  
crystal **display**)

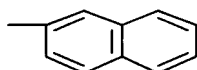
RN 681140-81-8 HCAPLUS

CN Benzeneacetonitrile,  $\alpha, \alpha'$ -(1,4-  
phenylenedimethylidyne)bis[4-(di-2-naphthalenylamino)- (9CI) (CA  
INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM H05B033-14  
 ICS G02F001-1335; H05B033-02  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
 Related Properties)  
 Section cross-reference(s): 74  
 ST **electroluminescent device** liq crystal  
**display** light source  
 IT Liquid crystal **displays**  
 (color; organic **electroluminescent device** and  
 liquid crystal **display**)  
 IT **Electroluminescent devices**  
 Light sources  
 (organic **electroluminescent device** and liquid  
 crystal **display**)  
 IT 301301-25-7 350025-77-3 **681140-81-8**  
 RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent device** and liquid  
 crystal **display**)

L55 ANSWER 9 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2003:374060 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:376151  
 TITLE: Electroluminescence elements with suppressed  
 concentration quenching and good resistance to  
 light oxidation, and **displays** and  
 electric lamps using them  
 INVENTOR(S): Matsuo, Mikiko; Sato, Tetsuya; Sugiura,  
 Hisanori; Okada, Hisashi; Arai, Kazumi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan;  
 Fuji Photo Film Co., Ltd.  
 SOURCE: Jpn. Kokai Tokkyo Koho, 37 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003142263

A

20030516

JP 2001-333315

200110  
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JP 3735288

B2

20060118

PRIORITY APPLN. INFO.:

JP 2001-333315

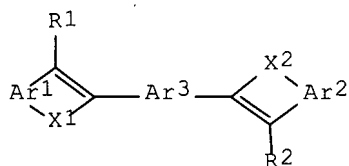
200110  
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&lt;--

OTHER SOURCE(S):

MARPAT 138:376151

GI



I

AB The electroluminescence (EL) element has between a pos. electrode and a neg. electrode a light-emitting layer containing the red light-emitting compds. I (Ar1, Ar2 = aryl, heterocyclic group; Ar3 = linking group containing aryl or heterocyclic group; R1, R2 = H, substituent; X1, X2 = O, S). The elements are useful for field emission **displays**, elec. lamps, backlights for LCD, etc.

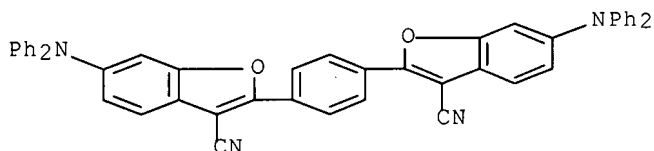
IT 522634-65-7 522634-66-8 522634-67-9  
522634-69-1 522634-71-5 522634-75-9  
522634-77-1

RL: TEM (Technical or engineered material use); USES (Uses)

(red organic electroluminescence elements with suppressed concentration quenching and good light oxidation resistance for **displays** and elec. lamps)

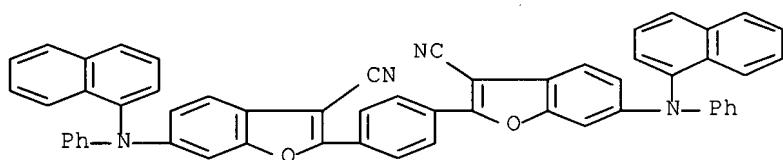
RN 522634-65-7 HCAPLUS

CN 3-Benzofurancarbonitrile, 2,2'-(1,4-phenylene)bis[6-(diphenylamino)- (9CI) (CA INDEX NAME)



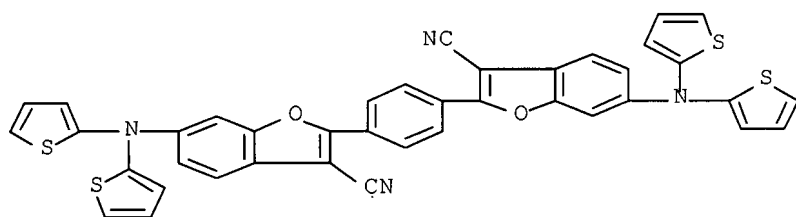
RN 522634-66-8 HCAPLUS

CN 3-Benzofurancarbonitrile, 2,2'-(1,4-phenylene)bis[6-(1-naphthalenylphenylamino)- (9CI) (CA INDEX NAME)



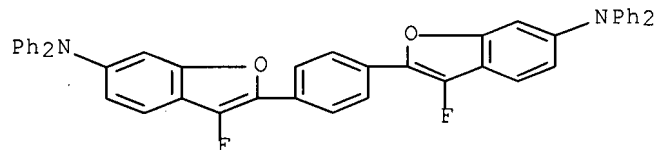
RN 522634-67-9 HCAPLUS

CN 3-Benzofurancarbonitrile, 2,2'-(1,4-phenylene)bis[6-(di-2-thienylamino)- (9CI) (CA INDEX NAME)]



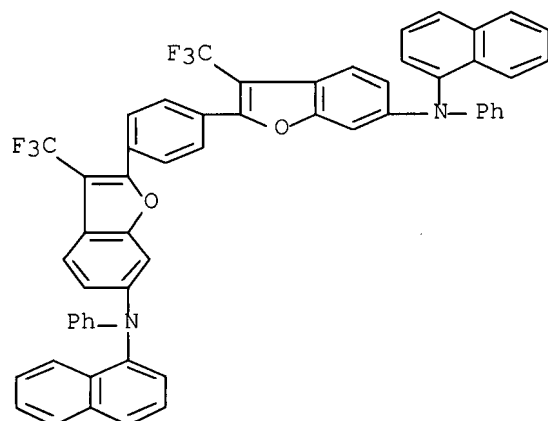
RN 522634-69-1 HCAPLUS

CN 6-Benzofuranamine, 2,2'-(1,4-phenylene)bis[3-fluoro-N,N-diphenyl- (9CI) (CA INDEX NAME)]



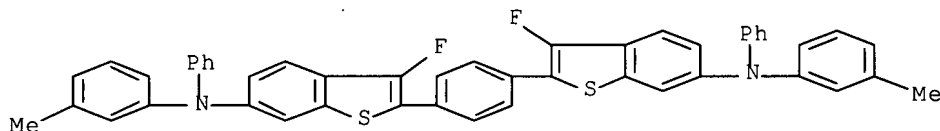
RN 522634-71-5 HCAPLUS

CN 6-Benzofuranamine, 2,2'-(1,4-phenylene)bis[N-1-naphthalenyl-N-phenyl-3-(trifluoromethyl)- (9CI) (CA INDEX NAME)]



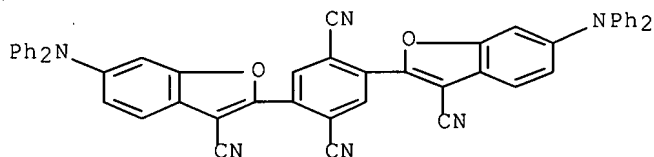
RN 522634-75-9 HCAPLUS

CN Benzo[b]thiophen-6-amine, 2,2'-(1,4-phenylene)bis[3-fluoro-N-(3-methylphenyl)-N-phenyl- (9CI) (CA INDEX NAME)



RN 522634-77-1 HCAPLUS

CN 1,4-Benzenedicarbonitrile, 2,5-bis[3-cyano-6-(diphenylamino)-2-benzofuranyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C07D307-80; C07D307-81; C07D307-82; C07D307-84; C07D333-58;  
C07D405-14; C07D409-14; C07D413-14; C09K011-06; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)

Section cross-reference(s): 74, 76

ST **electroluminescence device** red concn quenching  
prevention; benzofuran red org electroluminescence **display**  
; elec lamp electroluminescence light oxidn resistance

IT Liquid crystal **displays**

(backlight for; red organic electroluminescence elements with  
suppressed concentration quenching and good light oxidation resistance for  
**displays** and elec. lamps)

IT Electric lamps

Field emission **displays**

(red organic electroluminescence elements with suppressed concentration  
quenching and good light oxidation resistance for **displays**  
and elec. lamps)

IT **Electroluminescent devices**

(red-emitting; red organic electroluminescence elements with  
suppressed concentration quenching and good light oxidation resistance for  
**displays** and elec. lamps)

IT 41014-33-9 522634-62-4 522634-63-5 522634-64-6

522634-65-7 522634-66-8 522634-67-9

522634-68-0 522634-69-1 522634-70-4 522634-71-5

522634-72-6 522634-73-7 522634-74-8 522634-75-9

522634-76-0 522634-77-1

RL: TEM (Technical or engineered material use); USES (Uses)

(red organic electroluminescence elements with suppressed concentration  
quenching and good light oxidation resistance for **displays**  
and elec. lamps)

L55 ANSWER 10 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2003:56356 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:98068  
 TITLE: Electroluminescent styryl compounds and  
 yellow-to-red-emitting  
**electroluminescent devices**  
 therefrom  
 INVENTOR(S): Tamano, Michiko; Yauchi, Hiroyuki  
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003020477	A	20030124	JP 2001-207189	20010709

PRIORITY APPLN. INFO.:

JP 2001-207189

20010709

OTHER SOURCE(S): MARPAT 138:98068

AB Styryl compds. R1R2NAr2(CR3:CR4)mCR5:CR6(CR7:CR8)nAr1 [Ar1 = monovalent cyclic residue; Ar2 = bivalent cyclic residue; R1-R8 = H, cyano, alkyl, aryl (R5 and/or R6 is cyano); n, m = 0-10] and LED (**electroluminescent devices**) having layers of the compds. are claimed. The devices exhibit long life and high luminance.

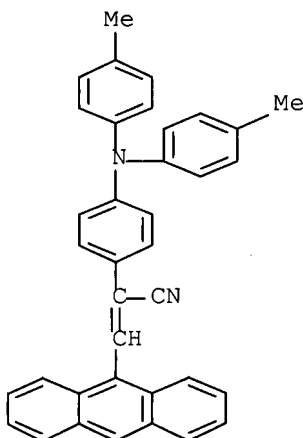
IT 483981-25-5P 483981-26-6P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(emission layers; electroluminescent styryl compds. for yellow-to-red-emitting LED with long life and high luminance)

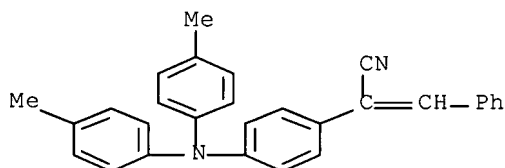
RN 483981-25-5 HCAPLUS

CN Benzeneacetonitrile,  $\alpha$ -(9-anthracenylmethylene)-4-[bis(4-methylphenyl)amino]- (9CI) (CA INDEX NAME)



RN 483981-26-6 HCAPLUS

CN Benzeneacetonitrile, 4-[bis(4-methylphenyl)amino]- $\alpha$ -(phenylmethylene)- (9CI) (CA INDEX NAME)



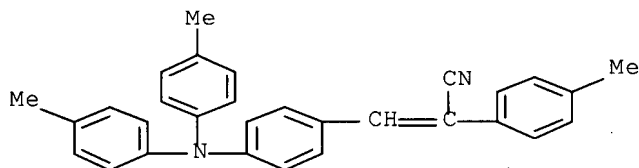
IT 483981-20-0 483981-22-2 483981-31-3  
483981-32-4 483981-34-6

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(emission layers; electroluminescent styryl compds. for yellow-to-red-emitting LED with long life and high luminance)

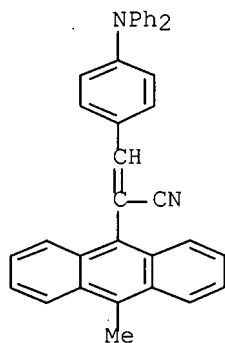
RN 483981-20-0 HCAPLUS

CN Benzeneacetonitrile,  $\alpha$ -[[4-[bis(4-methylphenyl)amino]phenyl]methylene]-4-methyl- (9CI) (CA INDEX NAME)



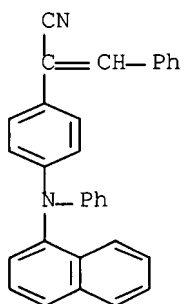
RN 483981-22-2 HCAPLUS

CN 9-Anthraceneacetonitrile,  $\alpha$ -[[4-(diphenylamino)phenyl]methylene]-10-methyl- (9CI) (CA INDEX NAME)



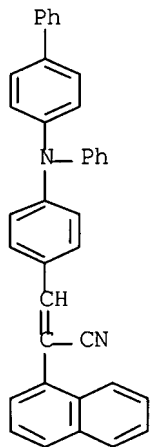
RN 483981-31-3 HCAPLUS

CN Benzeneacetonitrile, 4-(1-naphthalenylphenylamino)- $\alpha$ -(phenylmethylene)- (9CI) (CA INDEX NAME)



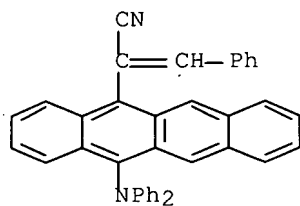
RN 483981-32-4 HCAPLUS

CN 1-Naphthaleneacetone nitrile,  $\alpha$ -[[4-([1,1'-biphenyl]-4-yl)phenylamino]phenyl]methylene]- (9CI) (CA INDEX NAME)



RN 483981-34-6 HCAPLUS

CN 5-Naphthaleneacetone nitrile, 12-(diphenylamino)- $\alpha$ -(phenylmethylene)- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS C09K011-06; C07C255-42; C07D265-38; C07D307-54; C07D333-60;  
C07D471-04; H05B033-14; C07D209-86; C07D333-24

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)

Section cross-reference(s): 25, 74

IT **Electroluminescent devices**  
 (displays; electroluminescent styryl compds.  
 for yellow-to-red-emitting LED with long life and high luminance)

IT **Electroluminescent devices**  
 (electroluminescent styryl compds. for  
 yellow-to-red-emitting LED with long life and high luminance)

IT Luminescent **screens**  
 Luminescent substances  
 (electroluminescent; electroluminescent styryl compds. for  
 yellow-to-red-emitting LED with long life and high luminance)

IT 21994-54-7P 483981-23-3P **483981-25-5P**  
**483981-26-6P** 483981-29-9P  
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
 (Technical or engineered material use); PREP (Preparation); USES  
 (Uses)  
 (emission layers; electroluminescent styryl compds. for  
 yellow-to-red-emitting LED with long life and high luminance)

IT **483981-20-0** 483981-21-1 **483981-22-2**  
 483981-24-4 483981-27-7 483981-28-8 483981-30-2  
**483981-31-3** **483981-32-4** 483981-33-5  
**483981-34-6** 483981-35-7 483981-36-8 483981-37-9  
 RL: DEV (Device component use); TEM (Technical or engineered  
 material use); USES (Uses)  
 (emission layers; electroluminescent styryl compds. for  
 yellow-to-red-emitting LED with long life and high luminance)

L55 ANSWER 11 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:734318 HCAPLUS Full-text  
 DOCUMENT NUMBER: 137:270136  
 TITLE: Organic **electroluminescent** element and  
**display devices**  
 INVENTOR(S): Naito, Katsuyuki  
 PATENT ASSIGNEE(S): Toshiba Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002280177	A	20020927	JP 2001-74540	200103 15

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PRIORITY APPLN. INFO.: JP 2001-74540

200103  
15

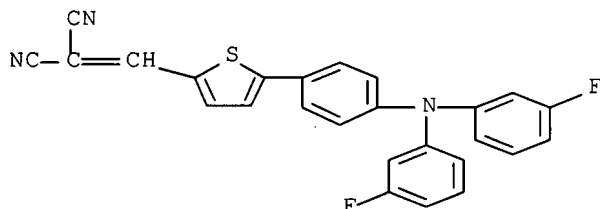
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AB The devices comprise: a glass substrate; an anode; a hole transport layer; a phosphor layer; an electron transport layer; and a cathode, where the phosphor layer contains a light-emitting dye containing a cyano group having an octal Log P > 6.5.

IT **462631-46-5** **462631-47-6**  
 RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent** element and **display**  
**devices**)

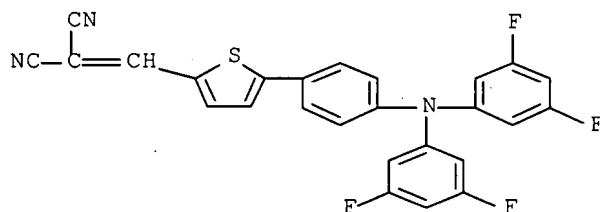
RN 462631-46-5 HCAPLUS

CN Propanedinitrile, [[5-[4-[bis(3-fluorophenyl)amino]phenyl]-2-thienyl]methylene]- (9CI) (CA INDEX NAME)



RN 462631-47-6 HCAPLUS

CN Propanedinitrile, [[5-[4-[bis(3,5-difluorophenyl)amino]phenyl]-2-thienyl]methylene]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-12; H05B033-22

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST org electroluminescent **display**

IT Anodes

Cathodes

Cyano group

**Electroluminescent devices**

Electron transport

Hole transport

Pigments, nonbiological

(organic **electroluminescent** element and **display devices**)

IT 147-14-8, Copper phthalocyanine 2085-33-8, Tris(8-quinolinolato)aluminum 7429-90-5, Aluminum, uses 11099-20-0

50926-11-9, ITO 65181-78-4, TPD 123847-85-8,  $\alpha$ -NPD

462631-38-5 462631-42-1 462631-44-3 **462631-46-5**

**462631-47-6** 462631-48-7 463358-14-7,

Poly(butyl-5,8-quinoxalinediyl)

RL: DEV (Device component use); USES (Uses)

(organic **electroluminescent** element and **display devices**)

L55 ANSWER 12 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:465654 HCAPLUS Full-text

DOCUMENT NUMBER: 137:39157

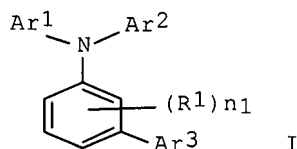
TITLE: Organic electroluminescent element, material and **display**

INVENTOR(S): Yamada, Taketoshi; Ueda, Noriko; Matsuura,

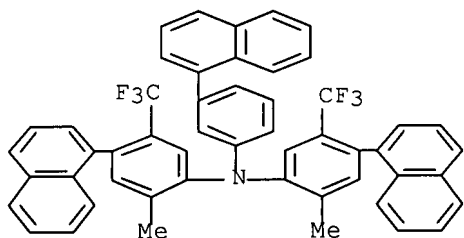


PATENT ASSIGNEE(S): Mitsunobu; Kita, Hiroshi  
 SOURCE: Konica Co., Japan  
 Jpn. Kokai Tokkyo Koho, 45 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002175883	A	20020621	JP 2001-231650	20010731
PRIORITY APPLN. INFO.:				
			JP 2000-285050	A 20000920
			JP 2000-292124	A 20000926
OTHER SOURCE(S): MARPAT 137:39157				
GI				

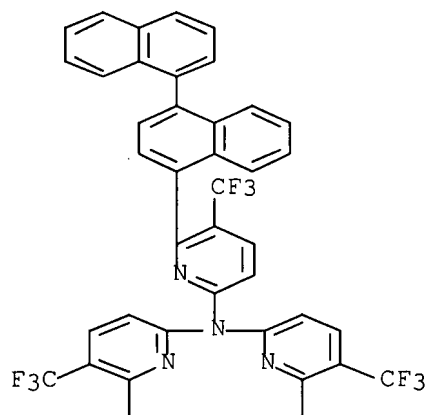


AB The invention refers to an organic **electroluminescent device** comprising the compound I [Arl-3 = (un)substituted aromatic hydrocarbon(heterocyclyl); R1 = alkyl, halo, alkoxy; n1 = 0 - 4].  
 IT 436086-55-4 436086-58-7 436086-65-6  
 436086-68-9 436086-69-0  
 RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent element, material and **display**)  
 RN 436086-55-4 HCAPLUS  
 CN Benzenamine, 2-methyl-N-[2-methyl-4-(1-naphthalenyl)-5-(trifluoromethyl)phenyl]-4-(1-naphthalenyl)-N-[3-(1-naphthalenyl)phenyl]-5-(trifluoromethyl)- (9CI) (CA INDEX NAME)

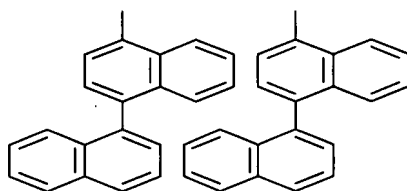


RN 436086-58-7 HCAPLUS  
 CN 2-Pyridinamine, 6-[1,1'-binaphthalen]-4-yl-N,N-bis[6-[1,1'-binaphthalen]-4-yl-5-(trifluoromethyl)-2-pyridinyl]-5-(trifluoromethyl)- (9CI) (CA INDEX NAME)

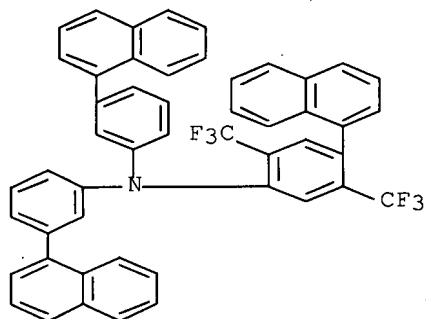
PAGE 1-A



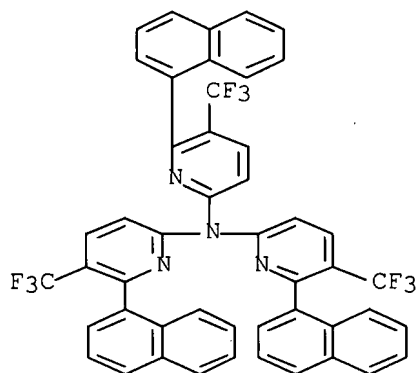
PAGE 2-A



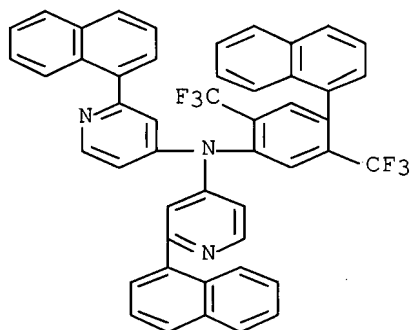
RN 436086-65-6 HCAPLUS  
 CN Benzenamine, 4-(1-naphthalenyl)-N,N-bis[3-(1-naphthalenyl)phenyl]-2,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 436086-68-9 HCAPLUS  
 CN 2-Pyridinamine, 6-(1-naphthalenyl)-N,N-bis[6-(1-naphthalenyl)-5-(trifluoromethyl)-2-pyridinyl]-5-(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 436086-69-0 HCAPLUS  
 CN 4-Pyridinamine, 2-(1-naphthalenyl)-N-[4-(1-naphthalenyl)-2,5-bis(trifluoromethyl)phenyl]-N-[2-(1-naphthalenyl)-4-pyridinyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C07D215-12; C09K011-06; H05B033-04; H05B033-12; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST **electroluminescent device** blue violet luminescence  
 IT **Electroluminescent devices**  
 (organic **electroluminescent** element, material and display)  
 IT 436086-40-7 436086-41-8 436086-42-9 436086-43-0 436086-44-1  
 436086-45-2 436086-46-3 436086-47-4 436086-48-5 436086-49-6  
 436086-50-9 436086-51-0 436086-52-1 436086-53-2 436086-54-3  
**436086-55-4** 436086-56-5 436086-57-6 **436086-58-7**  
 436086-59-8 436086-60-1 436086-61-2 436086-62-3 436086-63-4  
 436086-64-5 **436086-65-6** 436086-66-7 436086-67-8

436086-68-9 436086-69-0 436086-70-3

436086-71-4

RL: DEV (Device component use); USES (Uses)

(organic electroluminescent element, material and **display**)

IT 436086-36-1P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic electroluminescent element, material and **display**)

IT 436086-39-4P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic electroluminescent element, material and **display**)IT 86-58-8 90-14-2,  $\alpha$ -Iodo-naphthalene 108-36-1,1,3-Dibromobenzene 134-32-7,  $\alpha$ -Naphthyl amine 591-19-5,

3-Bromoaniline 363607-69-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(organic electroluminescent element, material and **display**)

IT 174846-53-8P, Tris(3-bromo phenyl)amine 436086-37-2P

436086-38-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);

RACT (Reactant or reagent)

(organic electroluminescent element, material and **display**)

L55 ANSWER 13 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:237976 HCAPLUS Full-text

DOCUMENT NUMBER: 136:270271

TITLE: Organic electroluminescent element and organic electroluminescent material used therefor

INVENTOR(S): Ueda, Noriko; Matsuura, Mitsunori; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Corporation, Japan

SOURCE: Eur. Pat. Appl., 72 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

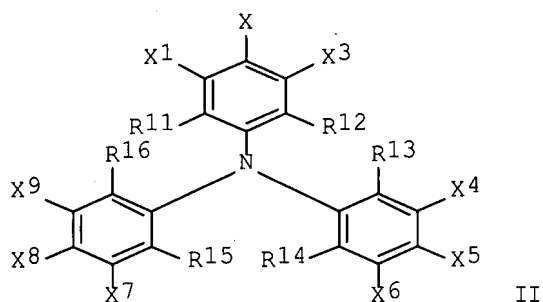
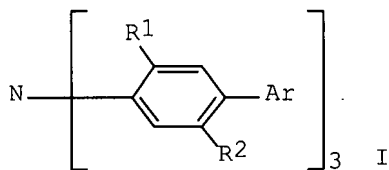
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1191821	A1	20020327	EP 2001-122501	20010921
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002249765	A	20020906	JP 2001-256036	20010827
<--				
US 2002094452	A1	20020718	US 2001-962483	20010924
<--				
US 6723455	B2	20040420	JP 2000-290466	A 20000925
PRIORITY APPLN. INFO.:				
<--				
			JP 2000-385286	A

200012

19

&lt;--

OTHER SOURCE(S): MARPAT 136:270271  
GI



AB Electroluminescent materials are described by the general formula I and II (R1, R2 = independently selected substituents; Ar = (un)substituted aromatic ring or (un)substituted aromatic heterocyclic ring; and R11-16, X1-9 = independently selected H or other substituents with the sum of the steric parameters for R11-16 being  $\leq -2.0$ ). **Electroluminescent devices** employing the materials and **displays** employing the devices are also described.

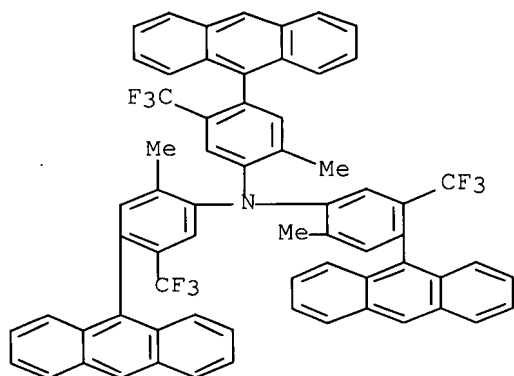
IT 405171-51-9 405172-85-2 405173-00-4

RL: DEV (Device component use); USES (Uses)

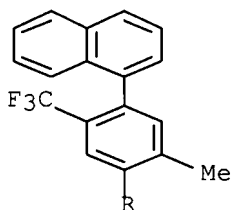
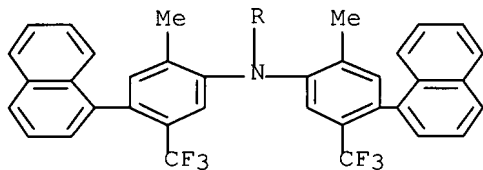
(electroluminescent materials based on triphenylamine derivs. and organic **electroluminescent devices** using them)

RN 405171-51-9 HCAPLUS

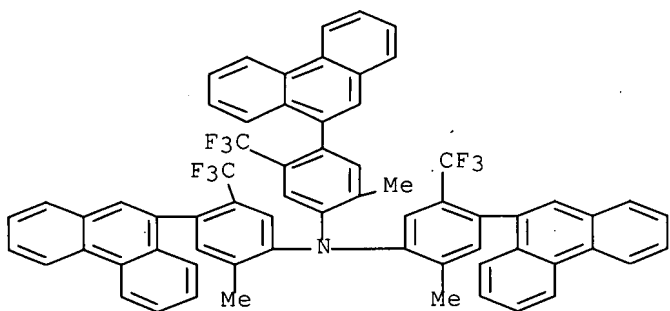
CN Benzenamine, 4-(9-anthracenyl)-N,N-bis[4-(9-anthracenyl)-2-methyl-5-(trifluoromethyl)phenyl]-2-methyl-5-(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 405172-85-2 HCAPLUS  
 CN Benzenamine, 2-methyl-N,N-bis[2-methyl-4-(1-naphthalenyl)-5-(trifluoromethyl)phenyl]-4-(1-naphthalenyl)-5-(trifluoromethyl)-(9CI) (CA INDEX NAME)



RN 405173-00-4 HCAPLUS  
 CN Benzenamine, 2-methyl-N,N-bis[2-methyl-4-(9-phenanthrenyl)-5-(trifluoromethyl)phenyl]-4-(9-phenanthrenyl)-5-(trifluoromethyl)-(9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06; H01L051-20  
 CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 76  
 ST triphenylamine deriv **electroluminescent device** material  
 IT Luminescent substances  
 (electroluminescent; electroluminescent materials based on triphenylamine derivs. and organic **electroluminescent devices** using them)  
 IT **Electroluminescent devices**  
 (organic; **electroluminescent** materials based on triphenylamine derivs. and organic **electroluminescent**

devices using them)

IT 405171-46-2 405171-47-3 405171-48-4 405171-49-5 405171-50-8  
**405171-51-9** 405171-52-0 405171-53-1 405171-54-2  
 405171-57-5 405171-87-1 405172-07-8 405172-16-9 405172-39-6  
 405172-50-1 405172-65-8 **405172-85-2 405173-00-4**  
 405173-23-1 405173-85-5 405174-01-8  
 RL: DEV (Device component use); USES (Uses)  
 (electroluminescent materials based on triphenylamine derivs. and  
 organic **electroluminescent devices** using them)

IT 363607-70-9P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (electroluminescent materials based on triphenylamine derivs. and  
 organic **electroluminescent devices** using them)

IT 95-78-3, 2,5-Dimethylaniline 1122-42-5, 2,5-Dimethyliodobenzene  
 1205-64-7 7726-95-6, Bromine, reactions 13922-41-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (electroluminescent materials based on triphenylamine derivs. and  
 organic **electroluminescent devices** using them)

IT 405171-44-0P 405171-45-1P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (electroluminescent materials based on triphenylamine derivs. and  
 organic **electroluminescent devices** using them)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L55 ANSWER 14 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:27765 HCAPLUS Full-text  
 DOCUMENT NUMBER: 136:110192  
 TITLE: Red-emitting organic **electroluminescent**  
**devices** with high electric energy  
 conversion efficiency and color purity  
 INVENTOR(S): Tominaga, Takeshi; Murase, Seiichiro; Kohama,  
 Toru  
 PATENT ASSIGNEE(S): Toray Industries, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2002008862	A	20020111	JP 2000-184268	200006 20

PRIORITY APPLN. INFO.: <-- JP 2000-184268 <--  
 200006  
20

AB The devices having emission peak at 580-750 nm, contain fluorescent substances  
 having fluorescent peak at 540-750 nm and condensed heterocyclic compds. (which  
 may be dopants), between anodes and cathodes. The compds. may have polar groups,  
 vinyl groups, aromatic rings, and/or heterocyclic rings. The devices are useful

for matrix-type **displays** (e.g., computers, televisions) and segment-type **displays** (e.g., clocks, thermometers).

IT **388094-37-9**

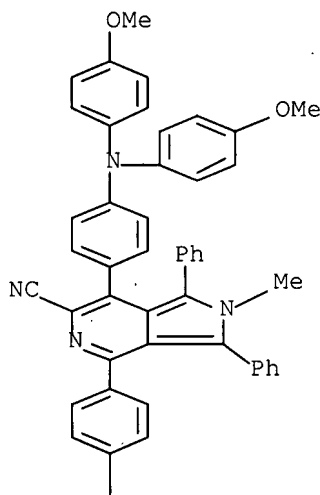
RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(dopant; red-emitting organic **electroluminescent devices** containing condensed heterocyclic dopants with high elec. energy conversion efficiency and color purity)

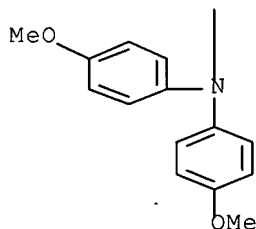
RN 388094-37-9 HCAPLUS

CN 2H-Pyrrolo[3,4-c]pyridine-6-carbonitrile, 4,7-bis[4-[bis(4-methoxyphenyl)amino]phenyl]-2-methyl-1,3-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM H05B033-14

ICS C07D333-20; C07D471-04; C07D471-16; C09K011-06; C07D241-42

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST red emitting org **electroluminescent device**

**display**; condensed heterocyclic compd dopant red LED; phenylquinolinolato host LED active matrix **display**

IT **Electroluminescent devices**



- (red-emitting; red-emitting organic **electroluminescent devices** containing condensed heterocyclic dopants with high elec. energy conversion efficiency and color purity)
- IT 50926-11-9, ITO  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (anode; red-emitting organic **electroluminescent devices** containing condensed heterocyclic dopants with high elec. energy conversion efficiency and color purity)
- IT 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses 7440-22-4, Silver, uses  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (cathode; red-emitting organic **electroluminescent devices** containing condensed heterocyclic dopants with high elec. energy conversion efficiency and color purity)
- IT 14640-21-2, Magnesium tetraphenylporphyrin 388094-37-9  
 388094-38-0 388094-39-1  
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
 (dopant; red-emitting organic **electroluminescent devices** containing condensed heterocyclic dopants with high elec. energy conversion efficiency and color purity)
- IT 82953-57-9 119273-55-1, 2,5-Dihydro-3,6-bis(2-methoxyphenyl)-2,5-dimethylpyrrolo[3,4-c]pyrrole-1,4-dione 145983-47-7 162845-44-5  
 184679-91-2 269408-24-4 362623-43-6, Tris(5,7-diphenyl-8-quinolinolato)aluminum 388092-92-0 388119-20-8  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (host material; red-emitting organic **electroluminescent devices** containing condensed heterocyclic dopants with high elec. energy conversion efficiency and color purity)
- IT 65181-78-4, TPD  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (pos. hole-transporting agent; red-emitting organic **electroluminescent devices** containing condensed heterocyclic dopants with high elec. energy conversion efficiency and color purity)

L55 ANSWER 15 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:343470 HCAPLUS Full-text

DOCUMENT NUMBER: 131:37844

TITLE: Organic **electroluminescent display device**

INVENTOR(S): Nakatsuka, Masakatsu; Kitamoto, Noriko

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 11144875	A	19990528	JP 1997-304691	19971106

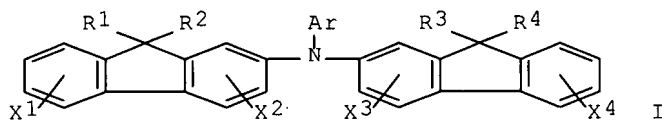
JP 3838766  
PRIORITY APPLN. INFO.:

B2 20061025

<--  
JP 1997-304691

199711  
06

OTHER SOURCE(S): MARPAT 131:37844  
GI



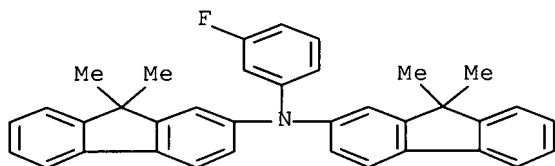
AB The organic **electroluminescent display device** contains compound I (Ar = aryl; R1-4 = alkyl, alalkyl, aryl; X1-4 = H, halo, alkyl, alkoxy, aryl) in a layer between a pair of electrodes. The organic **electroluminescent display device** is durable and has long service life.

IT 226965-57-7 226965-61-3

RL: TEM (Technical or engineered material use); USES (Uses)  
(organic **electroluminescent display device**)

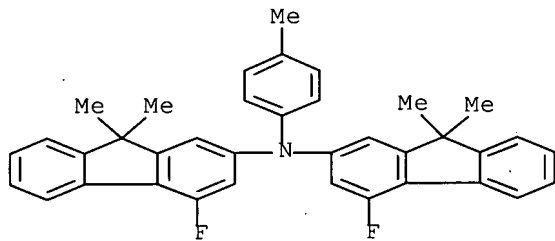
RN 226965-57-7 HCAPLUS

CN 9H-Fluoren-2-amine, N-(9,9-dimethyl-9H-fluoren-2-yl)-N-(3-fluorophenyl)-9,9-dimethyl- (9CI) (CA INDEX NAME)



RN 226965-61-3 HCAPLUS

CN 9H-Fluoren-2-amine, 4-fluoro-N-(4-fluoro-9,9-dimethyl-9H-fluoren-2-yl)-9,9-dimethyl-N-(4-methylphenyl)- (9CI) (CA INDEX NAME)



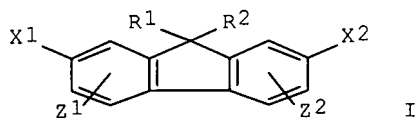
IC ICM H05B033-22

ICS C09K011-06; H05B033-14  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 73  
 ST org thin film electroluminescent **display**  
 IT **Electroluminescent devices**  
     (**electroluminescent display device**)  
 IT 164724-70-3 165320-27-4 165320-28-5 165320-30-9 165320-34-3  
 165320-35-4 165320-36-5 190334-65-7 226965-51-1 226965-55-5  
**226965-57-7** 226965-59-9 **226965-61-3**  
 226965-64-6 226965-66-8 226965-68-0 226965-70-4 226965-72-6  
 226965-74-8 226965-76-0 226965-78-2 227026-82-6  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (organic **electroluminescent display**  
     **device**)

L55 ANSWER 16 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1999:343468 HCAPLUS Full-text  
 DOCUMENT NUMBER: 131:37842  
 TITLE: Organic **electroluminescent**  
           **display device**  
 INVENTOR(S): Nakatsuka, Masakatsu; Kitamoto, Noriko  
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.  
           CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11144873	A	19990528	JP 1997-309060	199711 11
JP 3856546	B2	20061213	JP 1997-309060	199711 11

PRIORITY APPLN. INFO.: <--  
 <--  
 OTHER SOURCE(S): MARPAT 131:37842  
 GI

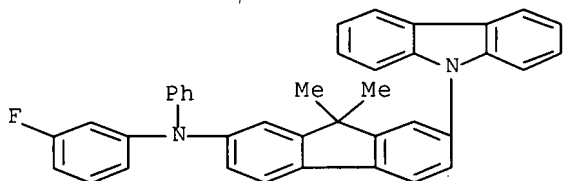


AB The organic **electroluminescent display device** contains compound I (X1 = N-carbazoyl, N-phenoxazyl, N-phenothiazyl; X2 = N-carbazoyl, N-phenoxadyl, N-phenothiazyl, N-aryl, aryl; R1-2 = H, alkyl, alalkyl, aryl; Z1-2 = H, halo, alkyl, alkoxy, aryl) in a layer between a pair of electrodes. The organic **electroluminescent display device** is durable and has long service life.  
 IT 226958-03-8

RL: TEM (Technical or engineered material use); USES (Uses)  
 (organic **electroluminescent display device**)

RN 226958-03-8 HCAPLUS

CN 9H-Fluoren-2-amine, 7-(9H-carbazol-9-yl)-N-(3-fluorophenyl)-9,9-dimethyl-N-phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST org thin film electroluminescent display

IT **Electroluminescent devices**

(**electroluminescent display device**)

IT 226957-93-3 226957-94-4 226957-95-5 226957-96-6 226957-97-7

226957-98-8 226957-99-9 226958-00-5 226958-01-6 226958-02-7

**226958-03-8** 226958-04-9 226958-05-0 226958-06-1

226958-07-2 226958-08-3 226958-09-4 226958-10-7 226958-11-8

226958-12-9 226958-13-0 226958-14-1

RL: TEM (Technical or engineered material use); USES (Uses)

(organic **electroluminescent display device**)

L55 ANSWER 17 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:519436 HCAPLUS Full-text

DOCUMENT NUMBER: 127:197527

TITLE: Light-emitting material for organo-  
**electroluminescence device** and  
 organo-**electroluminescence device** for which the light-  
**emitting material** is adapted

INVENTOR(S): Tamano, Michiko; Enokida, Toshio

PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 31 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 786926	A2	19970730	EP 1997-300551	19970129
			<--	
EP 786926	A3	19970806		

EP 786926	B1	20010822		
R: DE, FR, GB				
JP 09268283	A	19971014	JP 1997-7113	
				199701 20
			<--	
JP 3511825	B2	20040329		
US 5811834	A	19980922	US 1997-788436	
				199701 28
			<--	
PRIORITY APPLN. INFO.:		JP 1996-12488	A	
				199601 29
			<--	
OTHER SOURCE(S):		MARPAT 127:197527		
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

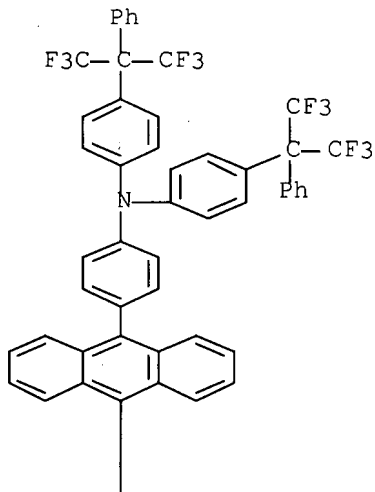
AB Compds. for use in **electroluminescent devices** are described by the general formulas I and II (A-D are the same or different groups each = (un)substituted alkyl, (un)substituted monocyclic group, or (un)substituted fused polycyclic group, or A and B and/or C and D, together with the nitrogen atom to which they are attached, form a substituted or unsubstituted heterocyclic ring; R1-20 are independently selected from H, halogen atoms, (un)substituted alkyl, (un)substituted alkoxy, (un)substituted amino, (un)substituted monocyclic, or (un)substituted fused polycyclic groups; and X1-4 are independently selected from various linking groups). Television sets, **light-emitting devices**, copy machines, printers, liquid-crystal **displays, displays**, electrophotog. photoreceptors, photoelec. converters, solar cells, and image sensors containing **electroluminescent devices** employing the compds. are also described.

IT **194296-44-1**  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (light-emitting materials based on bis(aminophenyl)anthracene  
 derivs. for organic **electroluminescent devices**  
 and the **electroluminescent devices** and  
**devices** using them)

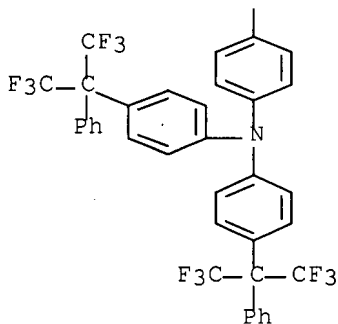
RN 194296-44-1 HCAPLUS

CN Benzenamine, 4,4'-(9,10-anthracenediyl)bis[N,N-bis[4-[2,2,2-trifluoro-1-phenyl-1-(trifluoromethyl)ethyl]phenyl]- (9CI) (CA  
 INDEX NAME)

PAGE 1-A



PAGE 2-A



- IC ICM H05B033-14  
ICS C09K011-06; C07C211-55; C07C211-56
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other  
Related Properties)  
Section cross-reference(s): 25, 52, 76
- ST **electroluminescent device** aminophenylanthracene  
deriv
- IT Photoelectric devices  
(converters; light-emitting materials based  
on bis(aminophenyl)anthracene derivs. for organic  
**electroluminescent devices** and the  
**electroluminescent devices** and devices  
using them)
- IT Phosphors  
(electroluminescent; light-emitting materials based on  
bis(aminophenyl)anthracene derivs. for organic  
**electroluminescent devices** and the  
**electroluminescent devices** and devices  
using them)
- IT **Electroluminescent devices**  
Electrophotographic apparatus

Electrophotographic photoconductors (photoreceptors)  
 Liquid crystal **displays**  
 Liquid crystal **displays**  
 Optical imaging sensors  
 Solar cells

(**light-emitting** materials based on  
 bis(aminophenyl)anthracene derivs. for organic  
**electroluminescent devices** and the  
**electroluminescent devices** and **devices**  
 using them)

IT 194295-85-7 194295-89-1 194295-95-9 194296-08-7 194296-10-1  
 194296-12-3 194296-14-5 194296-17-8 194296-19-0 194296-21-4  
 194296-24-7 194296-26-9 194296-28-1 194296-30-5 194296-32-7  
 194296-34-9 194296-36-1 194296-38-3 194296-40-7  
**194296-44-1** 194296-46-3 194296-48-5 194296-49-6  
 194296-50-9 194296-51-0 194296-52-1 194296-53-2 194296-54-3  
 194296-55-4 194296-56-5 194296-57-6 194296-58-7 194296-59-8  
 194296-60-1 194296-61-2

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (light-emitting materials based on bis(aminophenyl)anthracene  
 derivs. for organic **electroluminescent devices**  
 and the **electroluminescent devices** and  
**devices** using them)

IT 194295-92-6P 194295-98-2P 194296-03-2P 194296-06-5P  
 194296-42-9P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
 preparation); PREP (Preparation); USES (Uses)  
 (light-emitting materials based on bis(aminophenyl)anthracene  
 derivs. for organic **electroluminescent devices**  
 and the **electroluminescent devices** and  
**devices** using them)

IT 103-32-2, N-Phenylbenzylamine 591-50-4, Iodobenzene 620-93-9,  
 4,4'-Dimethyldiphenylamine 625-95-6, m-Iodotoluene 10081-67-1.  
 24672-72-8 106704-35-2, 9,10-Bis(4-aminophenyl)anthracene  
 194296-62-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (light-emitting materials based on bis(aminophenyl)anthracene  
 derivs. for organic **electroluminescent devices**  
 and the **electroluminescent devices** and  
**devices** using them)

L55 ANSWER 18 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1992:521222 HCAPLUS Full-text

DOCUMENT NUMBER: 117:121222

TITLE: Organic electroluminescent element

INVENTOR(S): Ota, Masabumi; Onuma, Teruyuki; Kawamura, Fumio;  
 Sakon, Hirota; Takahashi, Toshihiko

PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

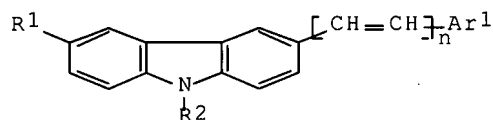
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 03163188	A	19910715	JP 1990-191516	199007

18

PRIORITY APPLN. INFO.:

<--  
JP 1989-212589A1  
198908  
18OTHER SOURCE(S): MARPAT 117:121222  
GI

&lt;--



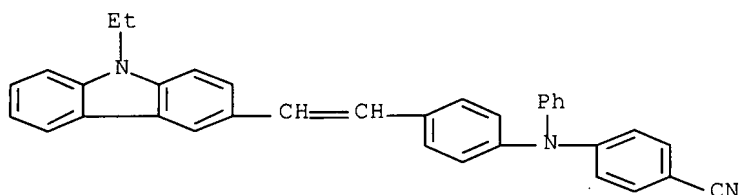
AB The title element, suited for use in large-area **displays**, comprises  $\geq 1$  organic compound thin-film layer sandwiched between an anode and a cathode layer, wherein  $\geq 1$  of the organic compound layer(s) contains I {R1,2 = (un)substituted alkyl, carbocyclic or heterocyclic aromatic ring; Ar1 = \*un)substituted carbocyclic or heterocyclic aromatic ring; n = 1-3}. The element is fabricated readily by VPE, providing a durable, high-luminescence, variable color-emitting device.

IT 138997-16-7

RL: DEV (Device component use); USES (Uses)  
(**electroluminescent device** from, as  
**light emitter** and/or electron or hole  
transporter)

RN 138997-16-7 HCAPLUS

CN Benzonitrile, 4-[[4-[2-(9-ethyl-9H-carbazol-3-yl)ethenyl]phenyl]phenylamino]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14; H05B033-22

CC 73-5 (**Optical**, Electron, and Mass Spectroscopy and Other  
Related Properties)

ST **electroluminescence** org variable color **device**IT **Electroluminescent devices**

(variable visible color-emitting, containing organic thin-film phosphor  
and electron and hole transporting layers)

IT 15082-28-7 26895-92-1 55034-79-2 58473-78-2 84746-59-8

117047-62-8 138997-11-2 138997-12-3 138997-13-4 138997-14-5

138997-15-6 **138997-16-7**

RL: DEV (Device component use); USES (Uses)  
(**electroluminescent device** from, as



light emitter and/or electron or hole  
transporter)

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